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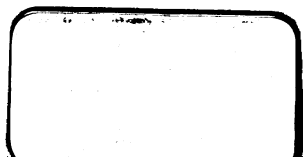
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F. B. Sleigh

The SCIENCE OF BUSINESS

BEING

The Philosophy of Successful Human Activity
Functioning in

BUSINESS BUILDING
OR
CONSTRUCTIVE SALESMANSHIP

By

ARTHUR FREDERICK SHELDON



LESSON FOUR
ABILITY DEVELOPMENT

CHICAGO, U. S. A.

1917

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INTRODUCTION

IT IS time for a brief review.

1. Four factors enter into life's relationships. These are as follows:

- (a) The party of the first part;
- (b) The party of the second part;
- (c) The thing concerning which the two parties communicate;
- (d) The meeting of the minds of the party of the first part and the party of the second part concerning the thing about which the two parties communicate.

2. Every one living is a party of the first part.

3. His success in life hinges upon his power to secure progressively profitable patronage.

4. To do this he must render permanently satisfactory Service.

5. This is true by reason of the fact that confidence is the basis of trade, and satisfaction is the bedrock upon which confidence rests.

6. To secure progressively profitable patronage the party of the first part must induce eight mental states, or cause eight effects in the minds of those with whom he comes in contact.

7. These effects are: (a) confidence, (b) favor-

able attention, (c) interest, (d) appreciation, (e) desire, (f) decision, (g) action, and (h) satisfaction.

8. To do this he must develop his intellect, his body, his sensibilities, and his volition.

9. To do this he must nourish and use his constructive capacities, faculties, qualities, and powers.

10. As he does this he develops ability, reliability, endurance, and action.

11. As he does this he increases his discrimination, ethics, accuracy, and speed.

12. As he does this he increases or improves the quality, quantity, and mode of his usefulness.

13. These are the universal elements entering into the principle of Service, the source of progressively profitable patronage.

14. To increase his ability a man must develop his intellect, and this is what we are now going to study.

This brings us to a study of the first primary law related to the principle of Service.

A principle is a fundamental law, or general truth, to which other laws are related and from which they are derived. The principle of Service, stated in the form of law, is as follows:

The power of the individual to secure progressively profitable patronage varies directly with his power to render permanently satisfactory Service.

The first primary law related to the principle just

stated has been explained in Lesson Three and reads as follows:

The power of the individual to render permanently satisfactory Service varies directly with the development of the constructive capacities, faculties, qualities, and powers of his body, intellect, sensibilities, and volition.

The first tributary law related to this first primary law will be stated at the beginning of the next chapter and explained during the lesson, together with other tributary laws related to it.

The study of the intellectual processes is more difficult than is the study of the sensibilities, the body, or the will.

When the student has passed the mile post of Lesson Four and understands it well, his journey from that time on will be found much easier.

Occasionally a student is obliged to wrestle with Lesson Four, but it can be mastered by any one who can read the English language intelligently and who is willing to pay the price of the effort which the subject demands and deserves.

If at any time assistance is needed, the Correspondence Department of the Sheldon School is ready to extend a helping hand. The function of this department is to assist students in mastering and applying the lessons, and we are glad to have them use this branch of our service freely.

THE AUTHOR.

LESSON FOUR

ABILITY DEVELOPMENT

CHAPTER I

THE PROCESS OF THINKING

Other things being equal, the power of the individual to render permanently satisfactory Service varies directly with his ability (intellectual capacity).

A LARGE lumber company employed many men. It was applying the principle of Service and therefore enjoying the benefits of a progressively profitable patronage. It was opening branch offices every now and then, which afforded good opportunities for advancement to those of its employees whose service-rendering power was of a high order.

Among others in the employ of the company were two men whom we shall refer to as John, a senior clerk in the home office; and William, a junior clerk, who was John's assistant.

John was considerably older than William and had been in the employ of the company several years longer than had his junior assistant. He was, however, at an age when he should have been in his prime as to service-rendering power.

A branch office was opened, and much to the

chagrin and disappointment of John, William received the appointment as manager.

John had been a faithful servant of the company, and, as he saw it, had done his best.

He was honest and faithful, performing all his duties the best he knew how, and he felt he had not received fair treatment when his assistant got the appointment which he, John, had very much desired.

He went to the president and asked him why the younger and less experienced man had been favored in preference to him, and the president, who was a kindly man, replied:

"I shall be glad to tell you why, John, but I want you to do something for me first."

"All right," answered John; "what is it?"

"I want you to go and see if any logs arrived in the yard last night."

John went out and in a little while came back and said:

"Yes, sir, some logs were delivered during the night."

"How many carloads?" asked the president.

"I don't know," replied John; "I did n't notice."

(Please note right here that John did n't **know**; that he did n't **notice**.)

"Well, I want to know how many carloads arrived," said the president.

John went again to the yard, and when he came back reported that twelve carloads had arrived.

The president then asked John what kind of logs they were. And again John said: "I don't know; I did n't notice."

"Well, please go and see what kind they are," said the patient president.

So John went out to the yard a third time, and when he came back stated that there were seven carloads of oak logs and five of maple.

The president thanked him, asked him to remain a moment, pushed a button, and William came into the office.

The president said to William exactly what he had first said to John:

"I want you to go and see if any logs arrived in the yard last night."

William went out, came back in a shorter time than it had taken John to make the first trip, and said:

"Yes, sir; twelve carloads were delivered, seven of oak and five of maple."

The president told William that that was all, and when William had gone back to his desk he turned to John and said:

"John, that's the reason."

And "that's the reason" why millions fail to secure progressively profitable patronage for their goods, which are their services.

John did n't take notice, and therefore he did n't "know" much about what he looked at.

The president had asked him to go and "see."

John did n't do that; he looked, but he did n't see.

William had no better eyesight than John, as far as the physical eye was concerned, but he had a better "mind-sight."

A great many people look a great deal but do not see much; they will never know very much until they correct that tendency.

For reasons which we shall explain directly, one who looks but does n't see will never have a great intellectual capacity.

No one can by any possibility acquire a high degree of intellectual man power until he not only looks with his eyes but **sees with his mind**; to do that he must concentrate upon the thing he is looking at and take real notice of it.

The difference in the ability of the two clerks started right there. Each was honest, and each in his way wanted to render Service. Each had the desire to serve, but William had a greater intellectual capacity for service, and the difference in their intellectual capacity began at the very foundation of thinking. It began with the amount of knowledge each took into his mind when he looked at things; all of which will be made perfectly plain in this our treatise on the subject of Ability Development.

This story is told at the beginning of this lesson on the science of developing the intellect for a very definite reason.

William was a clear thinker. He had a facility

for "seeing into" things, for taking in knowledge when he looked.

John was not a clear thinker, and it is a law of life that, other things being equal, the power of men to render permanently satisfactory Service varies directly with their capacity to think clearly.

Keep this story in mind as we proceed with our study of the Science of Ability Development.

Ability Development. As a result of his study thus far, the student knows exactly what ability is. It is the result which comes to any one who develops certain intellectual faculties, capacities, and powers.

When these faculties, capacities, and powers are properly nourished and properly used an increase of intellectual power is the natural result.

This, in turn, causes an increase in one's ability.

This increases one's power of discrimination and improves the quality of his work, also the quantity of his usefulness.

This in turn improves his service-rendering power and thus his power to secure progressively profitable patronage.

There are three units of power in the human intellect which, when developed, result in increased ability. We shall call these three units of intellectual power "faculties," in the sense that this word is used in this Science, as explained in Lesson Three. In other words, there are three things for

which one must have a marked facility, or ease in doing, in order to be justly rated as an individual of ability.

If one in any niche in the world's work can stand a good test on just three things, he thereby proves himself to be able; he is a man of ability.

This is the test:

1. Does he think clearly?
2. Does he remember well?
3. Does he imagine constructively?

Meeting this test favorably, the individual is a man of ability whether he is the president of a railroad, in the employ of a grocery company soliciting new business from private houses and delivering the goods sold, or in any other branch of useful effort.

To put it another way, if the president of a railroad can think clearly about the railroad business, is good at remembering things, and has the imaginative faculty rightly developed, he is an "able" railroad president.

And the same is exactly true of the employee of the grocery store. If he has the capacity to think clearly about the grocery business, to remember all the things that he ought to remember, and then exercises that initiative, or the power to do things without being told, that comes from the development of the imagination along constructive lines, then and only then has he the right intellectual

equipment to be a good solicitor and deliveryman for a grocery house.

In other words, with man's intellect he does only three things: (1) he thinks; (2) he remembers; (3) he imagines.

With his body, he can do a great many different things, for the reason that his body is the servant of the sum total of his mental powers: knowing, feeling, and willing.

But with his intellect, no human being in the world can do more than three things.

To put it in still another way, for the sake of absolute clearness, we might say that in the human intellect there are three implements or tools to work with, and only three. Every normal human being, so far as his intellect is concerned, has:

1. A thinker.
2. A rememberer.
3. An imaginer.

He has a faculty for thinking, a faculty for remembering, and a faculty for imagining.

This wonderfully simplifies the problem for any one who will simply accept this fact in Nature, for it is a fact. It wonderfully simplifies the accomplishment of anything if we can reduce it to its ultimate elements; and the fewer they are in number, the easier it is to deal with them.

Fortunately for man, Nature so arranged things that he has to do only three things in order to

become a man of real ability. He has to develop only three kinds of power to have good intellectual power, namely:

1. The power to think.
2. The power to remember.
3. The power to imagine.

Facility in doing these three things comes more naturally to some than to others. They are all faculties, however, which any one can develop through the cultivation of certain intellectual capacities, which we shall make plain during the course of our studies.

How to master the science of thinking. We shall first consider the faculty of clear thinking, for the reason that this is the very starting-point for the development of intellectual power.

It is Nature's necessary prerequisite. It is the forerunner of remembering and imagining.

One would have nothing to remember and no mental contents to imagine with unless first he had the thought stuff in his mind, and the thinking process is the intellectual process with which man manufactures thought.

The starting-point of the failure of millions of people is in their failure to develop the faculty to think. Some one has said that the majority of people never truly think. They only think that they think, and a great many only think that they think that they think.

And the basic reason why so many do not "think things out clearly" is because they don't know what the thinking process is. They don't know just what steps the mind takes in the process of thinking out thoughts; they have never studied Nature's process for the manufacture of thought stuff.

This is not to be wondered at, for the reason that the science of thinking is not as yet taught in our public schools, and the science of psychology has only within the past few years reduced the process of thinking to a scientific basis.

This has now been done; the light of organized facts—science—has been brought to bear upon the mental processes involved in thinking, and there is no longer any good reason why any one should not understand how to think.

He can now learn the processes through which the mind passes in the manufacture of thought, and learn how to put those processes into operation in his own mind, as easily as he can learn how to multiply, add, subtract, and divide in arithmetic, and more easily than he can learn higher mathematics and sciences such as chemistry, electrophysics, medicine, and the like.

We do not mean by this that it will not take effort. Everything worth having in this world must be paid for at a price. The more valuable it is, the greater the price one must pay.

It takes a great deal of effort to attain master-

ship in the art of adding, multiplying, subtracting, and dividing. Very few people, as a matter of fact, do these four things in a truly masterful way.

To become a master in the art of thinking scientifically it will take, first, earnest study, and second, much practice, but it can be done by any one of ordinary intelligence who is willing to pay the price of effort in these two things: (1) earnest study, and (2) practice in putting into operation the mental laws necessary for thinking, which laws will be made perfectly plain in this lesson.

We shall begin our study of the science of thinking by finding out exactly what the word "thinking" means.

Thinking defined. In order to think it is necessary "to perceive," "to know." The word perceive is derived from *per* (through) and *capere* (to take, receive). It means, therefore, in its literal sense, "to take or receive something through something."

To perceive is defined as follows: "To obtain knowledge through the senses; to receive impressions from, by means of the bodily organs; to take cognizance of the existence, character, or identity of, by means of the senses."

It is important that the student study the above definition carefully, and also the root meanings of the word perceive. As one studies the subject of thinking as a whole, the following facts will be made plain:

First. To think involves perception.

Second. To perceive necessitates the following performance:

1. Something must be "taken."
2. This something must be taken from something.
3. This something must be taken from something over something.
4. The thing taken from something over something must be taken **through** something, in order to be received by (get into) the mind as thought.

It is a fact in Nature, and not a theory of psychologists, that:

First. No man can think, in the scientific meaning of that term, without first taking or receiving something.

Second. While purely internal processes of thought are possible, the things "taken" which give rise to nearly all mental contents come from something in the outside world.

Third. The thing taken from the outside world must travel over or through something.

Fourth. When it has arrived it must be taken through something before it is received by the mind as mental content.

The prerequisites for thinking. Let us now find out exactly what these four prerequisite necessities for thinking are.

The student will recall the fact that in all human relationships there are four factors:

1. The party of the first part.
2. The party of the second part.
3. The thing they communicate about.
4. The meeting of the minds.

This quartette feature applies to the prerequisite necessities—what may be termed the foundation—of thought process, but in this case the first factor is human consciousness, the human mind, in some particular party of the first part.

The second factor is any objective thing in the outside world concerning which human consciousness obtains knowledge.

The third factor is the thing which travels from the objective thing in the outside world to human consciousness, and is what is known in psychology as a vibration.

The thing which it travels over in order to get from the objective thing to human consciousness is divided into two parts. The first part that is necessary for transporting or transmitting vibrations is the ether which surrounds and permeates all material things; and second, the nerves in the human body.

Right here we meet with the most difficult point in the science of thinking. We are at the start of it—the very beginning. We are examining the very soil in which the roots of the tree of thought grow.

We are going to find out what kind of stuff thoughts are made of, with which any human being does his thinking, and are going to show how thoughts are manufactured in Nature's laboratory.

Instead of teaching what to say and how to say it, in order to sell goods or accomplish anything else, Business Science is here teaching what to be and how to become it.

And right now Business Science is impressing the fact that to become able, to have ability and therefore intellectual power, one must have the faculty or facility of thinking clearly. In order to develop that facility there is something which must necessarily be done as a first step, and in the taking of this first step four factors are necessary. As soon as any one comes to see clearly just what these four factors are he will have a good start in the science of thinking, and the rest will not be so difficult.

If one gets the right start in a race, "gets off on the right foot" as we say, it is a great help to him in the winning of the race. But if he fails to get the right start he is badly handicapped all the rest of the way. It is just the same in learning the science of thinking.

We shall therefore spend all the time necessary in getting this right start; we are going to "get off on the right foot."

The first factor in thinking; consciousness. We

have said that four factors are essential for thinking, and we have explained what these four factors are.

The first factor, as far as you are concerned, is **you**, but it is the real you, and what are "you" in the sense that we are using the word as the party of the first part in thinking?

As already explained, it is your consciousness.

The thing which thinks, and which must receive something in order to think, is not your body. It is not even that part of your body known as your brain.

Your brain is merely the instrument, or one of the particular parts of your body, which the sum total of your consciousness uses in thinking. It is simply one of the instruments which you—your consciousness—uses as the foundation of the process of thinking.

The real "you," as you will recall from your study of Lesson Three, is the sum of your intellectual energy plus your emotive energy plus your volitional energy. These three added together make the "human soul" as that term is used in this Science, which is not a material thing at all; it is consciousness.

The consciousness is, then, the first factor in thinking; or rather, to be exact, we must say that at the very beginning of the human life it is the capacity for consciousness, the capacity for added

knowledge; for the knowing of things through the intellect.

It is that inherent potentiality that exists by the very nature of things, because Nature ordered it that way—that inherent but as yet undeveloped psychic energy with the capacity for receiving vibrations from the outside world which, after they have gone through certain processes, become thoughts and make the sum total of human consciousness.

The second factor in thinking. This, as we have already seen, is the thing or object in the outside world, either animate or inanimate, which sends something to human consciousness.

It may be a tree; it may be a man; it may be a book; it may be one of the lower animals; it may be a house. It may be any one of the millions of things which Nature has made and which exist as material things in the great outside world.

To make the process of thinking absolutely plain, let us now select one of these objects in the outside world and see how thoughts concerning it are born in consciousness.

We will select the tree which is just outside my study as I am writing these lines. That tree, like every other tree in the world, and every other physical thing, is composed of what is known in science as atoms. The atom is the unit of physical substance.

One might say that atoms are the bricks out of which the universe is builded. As far as this Science is concerned, we shall treat the atom as the smallest possible unit of matter. The word atom means "indivisible; that which cannot be cut."

The fact just stated—that the atom is the unit of substance in physical science—is a well-known fact to those of our students who are familiar with the sciences of chemistry and physics.

If any particular student has not studied physical science, he must simply accept this statement as a fact in Nature, if he wishes to learn the science of thinking.

Having accepted the fact that the tree in front of my study is made up of atoms, it is now necessary to grasp a second fact in physical science in order to understand the science of thinking; namely, every atom in this tree in front of my study, and every atom in every other particle of physical substance in the known universe is vibrating. In other words, it is moving; not one single atom in the known universe is standing absolutely still.

It is an accepted fact by the most conservative of physical scientists that there is no absolute inertia or rest, no absolute standing still, in Nature.

There is no wind blowing this morning. The tree that I am looking at, as a tree, is standing perfectly still; not even a leaf is stirring enough so that I can see it stir. But yet it is an established

fact in physical science, quite independent of the science of mind, that every atom in that tree is vibrating. And by "vibrating," we understand the word as used in common, everyday language. There is nothing mysterious about it. When we say each atom is vibrating, we mean simply that it is moving, oscillating.

The word *vibrate* comes from the Latin root meaning "to set in tremulous motion, to swing, oscillate, move one way and another."

In order to pursue the study of the science of thinking the student must at this point accept a third fact in physical science, the fact of the existence of what is known as "ether."

The word *ether* is derived from the Greek word *αἶθερ*, meaning "to kindle, to burn, to shine."

It is defined by the Oxford Dictionary as follows: "In Modern Physics: A substance of great elasticity and subtilty, believed to permeate the whole of planetary and stellar space, not only filling the inter-planetary spaces, but also the interstices between the particles of air and other matter on the earth; the medium through which the waves of light are propagated."

So, then, the ether is the finest substance that Nature has made. It is so very fine that it not only touches every part of the tree in front of my study, but it gets right into the tree. It permeates the tree just as water permeates a sponge. It soaks

into the tree, as it were, so that every physical unit of substance—every atom of the tree—is floating in a little pool of ether.

The ether is the medium for conducting electricity in the operation of the wireless. If it were not for the fact that every atom in a mountain was floating in a little pool of this very fine substance, ether, then the electrical waves in wireless telegraphy could not get through the mountain.

But they do get through the mountain and they travel through on the ether, which is in between the atoms of the coarser physical substances which combined make the mountain.

Having accepted these facts, (1) the existence of the atom as the unit of physical substance, (2) the fact that every atom is in motion, and (3) the fact that every atom in the physical world is floating in a little pool of ether, we are now ready to consider the third factor which enters into the foundation processes in the manufacture of thought.

The third factor in thinking; vibration. This third factor, as we have already stated, is the vibration, the motion, the moving to and fro of the waves of ether which are started and in fact are going all the time by reason of the fact that the atoms in physical substance are constantly in motion.

The moving atom starts a ripple in the sea of ether in identically the same way that a stone thrown into a pond starts a series of ripples which

eventually reach the shore. You cannot see these ether ripples as you can see the ripples of the water when you throw a stone into it, but they exist just the same, as all know who have studied physics and chemistry.

The atoms in the tree in front of my study are moving all the time, and therefore vibrations are continually going out from that tree and will go out just as long as the tree is standing.

The vibrations are taking place whether there is any party of the first part, or human consciousness, to receive them or not. The circumstances are such in this case that my particular human consciousness is here ready to receive them.

And these vibrations first travel through the ether that permeates the atmosphere between my body and the tree, and this is the first part of the trip of the waves from the tree to my consciousness, which eventually receives them. And so then they first travel from the tree up to the pupil of my eye, through the ether in the atmosphere only.

Within my eye there is an optical nerve; two nerves, in fact, for all nerves are arranged in pairs. One is called the sensory and the other the motor nerve. The sensory is also called the afferent and the motor the efferent nerve.

The eye is merely a very delicately made instrument which I—my consciousness—use to see with. The eye is the camera of the mind, the lenses and

mechanism being constructed on exactly the same principles as the camera, or rather the camera is copied after the mechanism which Nature made and which man named the human eye.

The eye is merely an instrument in which the optic nerve, with its two parts, sensory and motor, is delicately packed so that it won't get injured. The function of the sensory part of the optic nerve is to take up the vibrations which come through the ether in the atmosphere and transmit them to the gray matter of the brain, just as the electric wire transmits electricity from the point where it starts to its destination.

Nerves, then, physical nerves, are essential to the process of thinking. If you had been born without any nerves in your physical body, or if at birth something had happened to you that killed every nerve in your body, you could never have done any thinking about objects in the outside world for the very simple reason that vibrations from the outside world would have had no way of finishing their journey from the objective thing in the outside world from which they started up to the pupil of your eye. From there on they would have had no way of getting to your mind, as far as the sense of sight is concerned.

Of course, you might have been born blind and still vibrations could have gotten from the outside world to your mind, for the simple reason that every

normal human being has five sets of nerves by means of which vibrations from the outside world come up to consciousness.

They are as follows: (1) the nerves used to see with; (2) the nerves used to hear with; (3) the nerves used to touch with; (4) the nerves used to smell with; and (5) the nerves used to taste with. These are the five main sets of what may be termed, for the sake of illustration, the physical wires which Nature has provided as instruments over which vibrations from the outside world travel to man's inside world, which is his consciousness.

They are therefore the physical instruments used by Nature to provide him with the five physical senses: (1) seeing, (2) hearing, (3) touching, (4) smelling, and (5) tasting.

Modern investigators claim that man has other senses, such as the muscular sense and the sense of temperature, but these and others seem but shadings or modifications of the five basic senses, and Business Science is quite content to deal with the five well-known physical senses only as the foundation of the faculty of clear thinking.

Once one learns how to train the mind so that it uses these five senses right, he will have a good foundation for clear thinking.

So, then, the third factor entering into the preliminary process for thinking is vibration, and the vibration travels from some object in the outside

world up to what we shall term "the eye of the mind," first through the ether in the atmosphere; and second, through or over the optic nerve, which constitutes a special or concentrated conductor used by Nature for finishing the transmission of vibration from an object to the "eye of the mind."

It is important at this point that you note that term carefully. We say the nerve conducts the vibration to the **eye** of the mind.

Do not confuse this term with the physical eye. Man has a physical eye, but he also has what we shall term in this Science a mental eye—the eye of the mind—and the optical nerve in the physical eye is simply what may be termed Nature's wire for conducting vibrations up to that faculty in consciousness with which man really sees.

This physical eye is not the fourth factor in the preliminary necessities for thinking, for there is still something which the vibrations must pass **through** in order to be perceived by this mental eye.

This mental eye is known in the science of psychology as the **faculty of perception**.

The fourth factor in thinking; perception. The word "perception" is defined by the Oxford Dictionary as "to be or become cognizant of; the taking cognizance of or being aware of objects in general," and here also is the statement that it "sometimes practically equals consciousness."

But note that this great authority states that it **"sometimes practically equals consciousness."** There is a fine distinction between perception and consciousness itself.

The faculty of perception is rather that power of the mind by means of which the mind becomes conscious of things, and this becoming conscious of things results in mental contents, the sum of which makes consciousness.

We have referred to the faculty of perception as the mind's eye. It is that faculty of the mind by means of which consciousness—the first factor in thinking—perceives or comes to know about things.

It is, however, more than the mental eye, if we use the term "eye" only in the sense of seeing. It is the sensorium of consciousness. It is that faculty of the mind which interprets, or translates, the vibrations coming over each of the five sets of nerves into mental contents.

The perceptive faculty does not stop with interpreting physical vibrations coming over the optical nerve into consciousness. It also translates those vibrations which come over the auditory nerves (which is the term used for describing the nerves of the ear) and the olfactory nerves (or the nerves of the nose) and the tactual nerves (or the nerves used to exercise the sense of touch) and the gustatory nerves (or those used for exercising the sense of taste).

The perceptive faculty mentally perceives—comes to know, to obtain knowledge about—material things in the outside world as a result of the vibrations which come over **each** of the five sets of nerves.

In analyzing that which has been stated, note well the following facts:

First. The physical senses through which the mind has the faculty to see, hear, touch, taste, and smell are the foundation of thinking about all external or objective things. They do not constitute thinking any more than the foundation of the house constitutes the house, or any more than the acorn from which an oak tree grows constitutes the tree, but they are essential to thinking, just as the foundation is essential to the house and the acorn to the existence of the oak tree. There could be no oak tree if there had been no germ of life for its growth to start from. The acorn is an important factor in the life of the tree, although not the tree itself; it is the thing from which the tree grows, the beginning of the growth of the tree.

Second. Note very carefully the fact that the nerves act only as the wires over which vibrations are conducted to what we have termed the “eye of consciousness”—the perceptive faculty.

Third. Note that the nerves conduct or transmit the vibration up to the mentally seeing or perceiving faculty of the mind, but they do not **transmute**,

it—the vibration—into mental contents or consciousness.

Fourth. It requires something else to do this.

Fifth. Up to the time the vibration gets to this something else, it is a purely physical thing. It is not mental stuff; it is physical stuff pure and simple.

Sixth. The vibration has to pass through something in order to become so changed that the eye of the mind can perceive it.

To **transmit** means merely to “send over,” to move; but the vibration must be changed, transmuted, into something that the mental eye can perceive.

To **transmute** means to “change over”—to change the nature of the thing moved. For instance, the atoms in ice are moving. When molecular or atomic motion is increased, heat is the result; when it is increased to a high degree the ice is transmuted into water; and, if the vibration of the atoms is raised to a high enough point, the water is changed or transmuted into steam. The steam power may be used to generate electricity and the electricity may be transmuted into light.

So the physical vibration which, traveling from the tree in front of my study by means of the waves in the ether to the optic nerve in my physical organ known as the eye, and from thence over the optic nerve to the brain, arriving there still a phys-

ical thing, must be taken through something before it can be transmuted into something which the mind can see and thus become the light of consciousness.

And the something which it passes through is the gray matter of the brain, referred to in this Science as "the screen of consciousness."

So far so good, but in order to perceive or know that the thing is such and such a thing, in order that transmutation or change may take place, in order that the physical vibration may be changed to a mental vibration or thought power, the vibration must first cause a certain effect to happen in what we shall term "the screen of consciousness"—the gray matter of the human brain.

This effect is known in the science of thinking as a **sensation**. A clear understanding of "sensation," the real beginning of the mental or thought life, is of such importance to the whole subject of thinking that our next chapter will be devoted entirely to it.

Let us now review the facts gleaned thus far.

First. In order that the process of thinking may take place in the mind, a vibration must travel from something to the human soul.

Second. The vibration travels through the ether, connects with the optic nerve, and then travels up to the screen of consciousness, or gray matter, through which the conscious soul sees things.

This effect is known as "sensation."

This operation of the vibration causes this physical affection, or effect (sensation), to become so distinct that the mind's eye can perceive it.

Let us represent the facts discovered thus far by the following diagram:

The sum of mental content,—
knowing, feeling, and willing.

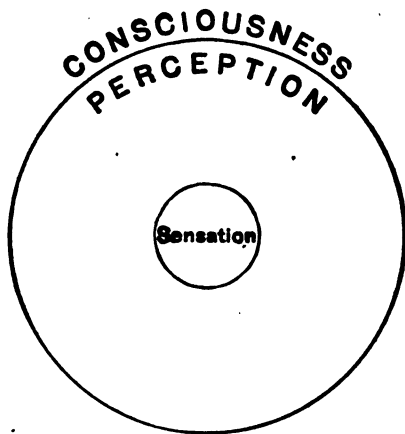


FIG. 1

Perception occupies the field lying between the two circles. The outer circle represents Consciousness—the synthesis or putting together of all man's mental elements, his three kinds of mental or psychical powers: namely, knowing, feeling, and willing.

The area bounded by the circle of Consciousness represents man's perceptive power—the power of the soul to mentally see or “perceive” things from the outside world, and later to perceive relationships between mental contents. This we shall call the faculty of Perception.

The small circle represents the effect which vibrations traveling over the nerve cause upon the gray matter in the brain, “the screen of consciousness”: namely, Sensation.

Unless perception takes place, there can be no consciousness.

Perception, in turn, could not take place if there were no sensations to be perceived.

Sensations, in turn, could not take place if there were no gray matter to receive vibrations; and gray matter could not receive vibrations if there were no nerves to carry them.

Vibrations could not exist if there were no ether, of which they are composed, any more than there could be water if there were no oxygen or hydrogen.

The ether in turn could not transmit motion if there were no material things to start the waves in the ocean of ether which surrounds and permeates all material things.

But material things do exist, and each atom of every material thing is in motion; the motion of the atoms of all material things is forever causing

vibrations to go from those things in every direction. They are there always, whether there is any human brain to perceive them or not.

Whenever a conscious human being comes in contact with a vibration from any material thing there is a certain effect on the screen of his consciousness—the gray matter of his brain.

The thing that happens is a **sensation**, which we shall study in our next chapter.

Summary

First. Other things being equal, the individual's power to render permanently satisfactory Service varies directly with his ability (intellectual capacity).

Second. Ability is the result of developing certain faculties, capacities, and powers.

Third. There are three things required if the individual is to be rated high in ability: (1) He must think clearly; (2) he must remember well; and (3) he must imagine constructively.

Fourth. That is, with the intellect a man does only three things: thinks, remembers, and imagines.

Fifth. To develop intellectual power a man must develop the power to think, the power to remember, and the power to imagine.

Sixth. The faculty to think clearly is a prerequisite for development of intellectual power; it is the forerunner of remembering and imagining.

Seventh. In order to think it is necessary to perceive and to know.

Eighth. There are four prerequisites for thinking: (1) Human consciousness; (2) any objective thing presented to consciousness; (3) vibration; and (4) the ether and the nerves.

Ninth. We find and accept three facts: (1) The atom is the unit of matter; (2) every atom is in motion; (3) every atom is floating in ether.

Tenth. Vibrations travel through the ether to the optic nerve.

Eleventh. The sensory part of the optic nerve takes up the vibrations coming through the ether and transmits them to the gray matter of the brain.

Twelfth. Here in the gray matter of the brain you become conscious of the sensation of sight.

Thirteenth. There are five sets of nerves over which vibrations from the outside world travel to man's consciousness.

Fourteenth. These are the physical instruments which provide man with the five physical senses—seeing, hearing, touching, smelling, and tasting.

Fifteenth. "The eye of the mind" to which the vibrations are carried by the afferent nerves is called the faculty of perception.

Sixteenth. The faculty of perception, or the mental eye, is the power by which the mind becomes conscious of things.

Seventeenth. Becoming conscious of things re-

sults in mental contents, the sum of which makes consciousness.

Eighteenth. The perceptive faculty translates all vibrations coming to the inner man over the five sets of nerves.

Nineteenth. The five physical senses are the foundation of thinking about all external objects.

Twentieth. The physical vibration traveling from the external object passes through the "screen of consciousness," the gray matter of the brain.

Twenty-first. In passing through the screen of consciousness the physical vibration produces an effect in the mind known as a **sensation**.

Twenty-second. The faculty of perception has two functions: (1) to perceive things from the outside world in sensation; and (2) to perceive relations between mental contents.

Twenty-third. Sensations are essential to perception and perception is essential to consciousness.

Twenty-fourth. Each atom of every material thing is in motion. This motion forever sends out vibrations in every direction. The ether transmits the motion. The human nerves carry the vibration to the screen of consciousness, the gray matter of the brain. Here an effect happens. It is called a sensation.

CHAPTER II

SENSATIONS

Other things being equal, the ability of the individual varies directly with his capacity to sensate.

IN ORDER to understand Nature's facts about sensation, as far as now discovered by science, we must first study a few well established facts in physiology.

The science of physiology, which consists of organized facts concerning the human body, and the science of psychology, which consists of organized facts concerning the human mind, are becoming more and more thoroughly and intimately related.

Physiology, through the sciences of surgery and medicine, has within the last few years revealed facts of most vital significance to students of the mind. Among these facts the following are of especial interest and intensely practical value to the student of the Science of Man Building, which is the most important branch of the Science of Business, for the reason already made plain—that man power is the cause of money power and the utilization of mechanical power.

Physiological facts to which we would at this

point challenge the earnest attention of the student may be enumerated as follows:

Basic fact No. 1. The gray matter of the brain, which is, of course, a part of the physical body, is the connecting link between matter and mind.

Professor W. Hanna Thomson, in his book on "Brain and Personality," page 40, states as follows:

"All are agreed that as far as the brain is concerned, the gray matter of the brain surface, technically called the cortex, is the ultimate seat of all processes connected with sensation and thought.

"This gray matter consists of a continuous layer, whose average thickness is from $1/12$ to $1/8$ of an inch, of a soft material of a very complex structure, in which are embedded immense numbers of little bodies of various shapes and sizes, unfortunately called cells, for they are not hollow.

"Between these cells ramifies a network of innumerable fine gray fibres.

"To save space, this layer of gray matter is everywhere folded upon itself, as one would crumple up a handkerchief in his hand, so that the surface of the brain presents a number of furrows or creases between the folds.

"The chief furrows, however, are quite definite in their location, so that the main folds are called lobes, and the smaller ones convolutions; and these, in turn, serve to map out the different regions of the brain surface, which are then named accordingly.

"Underneath and within the gray layer, and constituting the greater brain mass, is the white matter, which consists of bundles of gray fibres contained within sheaths of apparently an insulating material and white in color.

"Some gray fibres, however, have no coating.

"The function of a nerve fibre is wholly that of a conductor to and from the gray matter.

"On that account the white matter is not like the gray matter of the surface, the primary seat of any mental power, though in many instances these fibres form important links between the various cortical areas, which seem to promote associated actions between them.

"Here, therefore, in the gray matter of the surface of the brain we have a material substance which is the definite seat of the conscious mind. . . .

"Regarded thus, this form of matter is the most interesting and important substance in the world, for it is the only matter which we know of that is directly associated with mind."

Basic fact No. 2. This gray matter of the brain is where those nerves terminate which carry vibrations to the screen of consciousness from the outside world.

It is, in fact, as we have already seen, the screen itself. It is here that sensations, which are the beginning of thought, arise or are formed.

Basic fact No. 3. All nerves are arranged in pairs. The nerve fiber which carries the vibration to the gray matter is called by Professor Thomson the **afferent**, and the other part of the nerve which transmits the vibration from the center outward is called the **efferent** nerve. Each of these pairs of nerves (afferent and efferent) is connected by a nerve center made of cells and fiber.

This central cell receives the vibration. It is Nature's delicately adjusted shock absorber. It re-

ceives the shock or jar caused by the vibration, which has traveled through the ether and along the afferent nerve, and then sends the vibration back, but never over the afferent nerve which brought it in, but over the efferent nerve, which Nature has provided for that purpose.

These facts are made plain by Dr. Thomson as follows:

"We will begin now with the simplest illustration of what a nervous system is.

"Reduced to its most primitive form, as it is in the lowest animals which show a trace of a nervous system, it is proved to consist of three parts:

"(1) A nerve filament receives and transmits a stimulus to (2) a nerve centre of soft gray cells and fibres, which receive this stimulus and which centre reacts to this stimulus never on the nerve which brought it, but on (3) a nerve filament which proceeds from the centre.

"Hence these two filaments are accordingly named, the first Afferent, because it transmits to, and the second Efferent, because it transmits from, the centre some nervous vibration. One of the commonest examples of efferent excitation is when muscles contract in response to the efferent excitation of their motor nerves.

"A fair illustration of this mechanism can be found in ourselves in the act of winking. You can abolish the power to wink in one of three ways. You may do it, first, by cutting the branch of the fifth cranial nerve, which transmits sensation to the nerve centre for winking at the top of the spinal cord. This centre then does not know that any winking ought to be done, because it depends for all news of that kind on the sensory fifth nerve, and that has been cut.

"Or, you may abolish winking by cutting the proper branch

of the seventh pair of cranial nerves; then, no matter how the fifth nerve tells the centre that it ought to wink hard, the centre answers: 'I cannot do it, because the seventh nerve, which is the efferent or motor nerve that works the muscles of the eyelids, is cut.'

"Or, lastly, with both the fifth and seventh nerves intact, no winking will occur, because the nerve centre itself has been deadened by some narcotic poison.

"From that simple beginning of a real nervous system, one can proceed, step by step, with animals still utterly brainless, but which have more developed and complicated nervous systems; and yet in them no other mode of working than by afferent, centric and efferent elements can be discovered.

"What one finds in these more organized nervous systems is a greater number of these centres, each with its afferent and efferent nerves, but with one important addition, namely, that the separate nerve centres in them are connected by short nerve fibres, which are for the purpose of enabling the centres to work together, something as the jars of a Leyden battery are connected by short chains.

"A still further development shows a regular chain of such nerve centres forming a distinctly ascending series, whose functions never change or abolish the original afferent and efferent mode of working, but instead show a more and more perfect harmony of action between the several parts. By this harmony of action new results in movement, or in the direction of movement, are secured, which would be impracticable were the separate centres to work independently.

"After a certain number of nerve centres have become associated, according to the scale of the animal's development, we find that the mutual coöperation of the centres begins to be plainly more frequent in certain directions than in others; that is, that it seems easier for the centres to act together to execute some movements than to execute other movements.

"When we examine why this is so, it proves to be because

of the more frequent repetition of certain afferent stimuli than of the other afferent stimuli. Repeat one afferent excitation a hundred times and another only once, and the movements consequent on the first are clearly much more readily caused than those following on the unusual excitation."

The importance to the student of Man Building of the above facts as stated by Professor Thomson can hardly be overestimated. It is the hope of the author that each student of this Science will pause at this point and study carefully the foregoing quotation.

Basic fact No. 4. The repeated action of the vibrations coming over the afferent or incoming nerve, and the reaction upon the nerve center which sends the nervous impulse or current out again over the efferent nerve, cause the gradual formation of what are known as definite brain areas through which consciousness operates.

In other words, the mental eye—the eye of the mind—perceives through certain areas of the gray matter of the brain. These areas are really organs of the mind through which perception is made possible.

The ego or self uses one particular area of the brain to see with, another to hear with, another to touch with, another to taste with, another to smell with. It also has another special place in the brain through which it exercises the faculty of speech, and so on with everything which the mind does, as a whole.

This proves that one does n't see with his physical eye. The real man is the sum total of consciousness—the self—and it, as an individualized entity, uses the physical eye as a finely adjusted instrument which brings vibrations to it.

These vibrations cause sensations in the gray matter which the mind perceives through a particular part of the brain it uses for the purpose of seeing.

Professor Thomson expresses this thought as follows :

"If one particular area of this gray matter be destroyed, sight is totally lost, though the eye itself in all its parts, with the nervous tract leading therefrom to the brain, be wholly intact.

"If another particular cortical area is similarly injured, hearing is abolished, though the ear with all its apparatus be uninjured.

"The consciousness of sight or of hearing, therefore, is neither in the eye or ear respectively, but in these special localities on the brain surface.

"To use the phrase of an old anatomist, 'the gray matter is the animal.' There can be no question also that upon the integrity of this gray matter depends the integrity of all mental processes, for these can be proportionately perverted by anything which interferes with the physical condition of the gray tissue, or by agents which derange its working.

"Thus mechanical injuries of the brain in man often have been followed by peculiar mental disorders, sometimes including change in disposition or in moral character.

"The most striking illustrations of this kind, however, and which can be produced at will, are furnished by the action of brain poisons.

"In fact, a curiously interesting treatise might be written with the title of 'The Metaphysics of a Drug Store.' Thus, opium powerfully stimulates those mental processes which are related to the imagination, so that the opium taker becomes intensely interested in his own trains of suggested ideas. He is therefore silent and solitary, and thus contrasts with the alcohol taker, who has his feelings and emotions so stimulated by that poison that he would fain share them with other persons, and becomes both familiar and talkative.

"One of the most singular in its effects on the mind is hashish or Indian hemp. When fully under its influence, the hashish smoker can be made to entertain a most vivid sense of the objective reality of any suggestion which is made to his fancy.

"I once knew a party of Arabs who, drunk with this drug, came to an opening in an overarched street in an Oriental town through which the moonlight streamed upon the pavement. The leader of the party took the moonlight for a pool of water and forthwith drew up his trousers to wade carefully through it, and was followed by all the rest of them doing the same thing.

"Hence, by merely introducing certain definite substances into the blood stream, as it rapidly courses through the brain from its four great arteries, we can produce well-defined mental processes characteristic of the operations of these agents; or, in other words, sensations, feelings, and ideas specifically generated by these wholly material things.

"In time also the persistent use of these agents seems to alter the personality itself. Thus, a confirmed drunkard finally becomes more unlike his former self than an average European differs from an average Asiatic. . . .

"What we have arrived at so far is that the gray matter is the physical basis of the mind. No one now disputes this. The eye does not see any more than an opera glass sees. It is one place only in the gray cortex which actually sees. And

as with the consciousness of sight, so doubtless the seat of every other special form of mind consciousness is somewhere in this mysterious layer."

Positive proof of the fact that the perceiving self—the sum total of consciousness—does actually use special areas of the brain for special purposes has been afforded by surgery, which has shown that if certain places in the gray matter of the brain become deranged, certain faculties are disturbed.

If a certain area is destroyed, the faculty of speech is destroyed; in fact, the mind seems to have an almost endless number of special brain areas.

The faculty of sight, for instance, is subdivided into specialized areas. The mind uses one certain place to see words with, and another to see things with.

Doctor Thomson gives some very instructive and interesting illustrations of this fact, among them the following:

"I was once hurriedly sent for by an old patient of mine. I found her much disturbed by a strange experience which she immediately detailed in the well-chosen words of an educated woman. 'What is the reason, Doctor,' she said, 'that everything in a book or newspaper is illegible to me? Last evening I sent an advertisement to the Herald for a waitress, and when the girls came this morning I could not read their references. I then took up the Herald and found that I could not read a word in it. At first I supposed my eyesight had failed, but I could see everything around the

room as well as ever, and so also with my crochet work. I then opened the Bible, but could not read a word. What is the matter with me?"

"I at once recognized that she had been struck with word-blindness, as this affection is technically termed, and from that day to her death, two years later, she never saw a word.

"In a moment of time she had become as illiterate as an Australian savage, and she remained so. Having calmed her excitement as best I could, I was able to note that she had absolutely no other disorder of speech and none of vision. She heard every word that came to her ears, and she could speak as fluently as ever, but no word could reach her consciousness through her eyes.

"All that which as yet had happened to her was that a little artery which supplies blood to a small area in the visual region of her brain had become plugged, with the result of totally disorganizing the gray matter where eye words are registered. The words, 'the blood thereof, which is the life thereof,' find their best illustration in that most living of things, the brain gray matter, for it immediately dies if deprived of its supply of blood.

"Another example of the total loss of the power of recognizing words occurred in a hospital patient, but in him it was not words that came through the eye, but words that came through the ear, which he could not recognize, so that he had what is termed word-deafness.

"He was a naturally intelligent young man under thirty, a clerk in a mercantile establishment, and was supposed to have become insane, because though he talked incessantly, he talked only gibberish, and moreover he did not seem to understand what was said to him.

"It was soon found, however, that he could read and write as well as ever, so that to all questions that were put to him in writing he wrote correct answers. The reason why he talked so incoherently was because he could not hear his own

words, and for the same reason all words addressed to his ears reached his consciousness only as sounds, but were otherwise as unintelligible to him as the words of a language which he had never heard. It was also words only that he could not hear, for he heard and recognized all other sounds, including the tick of a watch and the notes of a canary bird. Such cases of word-deafness are due to the same kind of damage to a small locality in the auditory area of the brain as that which causes word-blindness in the visual area.

"A third form of loss of words is still more common. A man retires to bed in good health, but is found in the morning utterly unable to speak a word. It is soon ascertained that he has no word-deafness, for he evidently understands everything that is spoken to him, and that he has no word-blindness, because he can read. But he may not be able to utter a word, still less a sentence. In his distress, he may make signs that he would like to write, but even if he can hold a pen well and begin to write, it is usually found that he cannot find the words to express himself by writing any more than he can by speaking.

"Thus it is that processes of disease enable us to analyze our brain mechanism of speech with all the precision of well-devised experiments. By this means we learn, as otherwise we could not, that speech is of two kinds.

"The first kind consists of words which come *to* us, and these are words which arrive through the ear, and then go to a particular locality in what is called the first temporal convolution, which is in the cortical area of hearing, where they are received as words; and the second consists of words which come to us through the eye in reading, and which go to an entirely different place from the ear words, for they are received as words in a special locality called the angular gyrus in the cortical visual area.

"It is to be remembered that there is no resemblance whatever between the sound of the word man, for example, and

the written word man, for sound and sight are two wholly separate things; and hence sound words and sight words have each their different brain registries. Modern invention has doubtless added a third word registry connected with the sense of touch, by which the blind are enabled to read, but its special locality has not yet been identified.

"The second kind of speech consists of words which go *from* us, or which we ourselves utter. This division of the faculty of speech is wholly different from the first, because in that we are passive and *receive* the words, while in this we are active and ourselves *give forth* the words.

"We do this either by word of mouth or by word of hand in writing, and to thus express ourselves an entirely distinct mechanism is required, because it involves muscular movements. It is therefore called motor speech, and proceeds from an altogether different place in the brain cortex, in a region from which muscular movements are initiated, particularly in those regions which govern the movements of the tongue and other muscles of articulation, and which are also in proximity to the motor areas governing the hands.

"Here in a small patch of gray matter, not larger than a hazel nut,¹ located in a part of a convolution called Broca's convolution, from the French surgeon who first identified its connection with speech, resides every word that can be spoken!

"Let this remarkable piece of matter be separately destroyed, as it often is by a gush of blood from a ruptured artery, and the consciousness is utterly unable to find a word with which to express itself. It still may have its power to receive all words from others through the ear or eye, but not a word can it communicate in return. These different derangements of speech, due to organic changes in the word mechanism, are technically called 'aphasias,' and divided into the sensory

¹Rosenstein, quoted by Sir Wm. Gowers: *Diseases of the Nervous System*, vol. ii, p. 115, 2d edition, 1901.

forms, when eye or ear words are deranged, or motor aphasia, when Broca's convolution is damaged.

"Now, as we have remarked before, the gray matter of no one of these three seats of words originates or makes any words. They are simply registered there for use, as they would be on a printed page, or on a wax leaf of a phonograph, and how that is done we will learn further on.

"We have already likened those speech areas to the shelves of a library, with words arranged thereon like so many volumes, and that something very similar to this is actually the case is demonstrated by facts such as these. When a man sets about to learn a language new to him, he has to add another brain shelf for that purpose, because the old shelf has too many books on it to allow any room for a row of entirely new words. Professor Hinshelwood,¹ of the University of Glasgow, publishes the case of a highly educated man who was brought to him for an attack of ordinary word-blindness.

"He could read his native English in print only with the greatest difficulty, and words in writing scarcely at all. As Dr. Hinshelwood was told that the patient had learned Greek, Latin and French, he first tested him with Greek, when the patient was surprised and delighted to find that he could read Greek perfectly, as he did paragraphs in Homer, Thucydides and Xenophon. Then testing his Latin, he could read it far better than he could English, but not as perfectly as Greek, while in French he made more mistakes than in Latin, but still read it a great deal better than he could his native English. The only explanation, of course, of this case is that the injury to his brain matter nearly ruined the English shelf, then damaged to a less extent the French, and still less the Latin shelf, while the Greek shelf escaped entirely.

¹*Lancet*, Feb. 8, 1902. Also his book, *Letter, Word and Mind Blindness*, London, 1901.

"The same arrangement holds true also in the auditory word mechanism. Dr. Hinshelwood reports the case of a Frenchman who made his living in Glasgow as a teacher of French for a number of years, during which he learned English. After returning to his native country he had a stroke of apoplexy, from which he became word-deaf in French, while his English shelf remained intact, so that his wife could speak to him, but only in English.

"These cerebral library shelves may also be partially, instead of completely, damaged by accidents to the brain, with results not unlike those which often disturb the equanimity of a student when the house-cleaning season arrives, and women invade his study for a general dusting of his books. For days afterwards he picks up the wrong book, because it has been put back where it does not belong.

"So, after some brain shock, a person may be able to speak, but the wrong word often vexatiously comes to his lips, just as if his Broca shelves had become badly jumbled. To this condition the term 'paraphasia' is given.

"There may be shelves in these cerebral libraries, however, for other things than words. Professor Edgren of Stockholm has published the records of a number of patients who had lost the power of reading music, though they could still read words, that is, they became music note-blind instead of word-blind. In Dr. Hinshelwood's patient mentioned above, who could read Greek but not English, the reverse took place, for he could still read music as well as ever, though he could not read a sentence in English.

"The most interesting, however, of these separate registries is that for figures. As the damage to the speech apparatus often involves more than one registry, the following record of a case in my own experience is of interest, because it proves that if only one of the three speech mechanisms remains uninjured, the personality can use that one sufficiently well for all practical purposes.

"A gentleman, who during a long, active business career had accumulated a fortune, had an attack of apoplexy which, while causing no muscular paralysis, yet made him both word-blind and wholly unable to utter a word. He remained in this condition for seven years, but what brought him to my office, in company with his lawyer and only son, was that my opinion was sought as to his competence to make a will.

"His lawyer produced one in which the patient devised a certain amount of property, consisting of pieces of real estate and of other items, each very definitely mentioned, to his married daughter, which was, in the testator's opinion, a very fair division of his property between his two children.

"His manufacturing business, however, he devised exclusively to his son. Learning that his son-in-law was dissatisfied with this arrangement, and might induce his wife to contest her father's will after his death by a claim to a share in the profits of the factory, on the ground that in his condition he was incapable of making a will, he came to me as an expert to give my written opinion on the subject.

"It was naturally felt by his son and his lawyer that a very plausible case might be made out to the jury by the other side, that a man who could not himself read a word of his will, nor utter a sound by which he could express what he wanted, might easily be imposed upon by the persons interested to do so.

"In my examination of him, it was found that though he could not read, and likewise could not write, as his utterance speech mechanism was wholly ruined, yet he could both read and write figures as well as ever, in fact that he was unusually adept in all arithmetical calculations.

"Meantime nothing could persuade him to retire from business, and so for seven years he continued to buy and sell as he always had done, for he wrote the sums for all transactions, and pointing to the figures with his pencil, the bargain had to be forthwith concluded.

"In illustration he produced a memorandum book of his, in which were entered numerous such accounts, particularly directing my attention by his finger to one of them in which he had bought a third interest in a business enterprise, and in which he had entered all payments correctly on that basis, the sums varying according to the year's profits.

"As questions relating to the testamentary capacity of aphasics have come up in many courts of both Europe and America, quite a literature has grown up on this subject, and I proceeded to test this particular case according to its accepted rules.

"I took the will and looked it carefully over before him, and then read it aloud, item by item, to each of which he nodded assent, until I designedly misread one stipulation as in favor of the son when it was actually in favor of the daughter. The old gentleman was furious at my supposed mistake, and was quick to correct any other inaccuracies in my reading, however minor in importance they were.

"I therefore could give a decided opinion that he was entirely competent to devise a will, and I was glad to learn afterwards that this precautionary measure on his part prevented any trouble in settling the estate when he died some months afterwards. The place for registering figures is doubtless somewhere in the visual area of the cortex, but in his case so removed from the eye-word registry that it escaped damage as completely as his ear-word mechanism had done.

"Meantime this patient had repeatedly tried to learn to speak and to read again after the sudden onset of his calamity, but though he endeavored with characteristic perseverance to get back some of the lost parts of his speech, yet he failed altogether. Mentally he was just the same, and his personality with all its peculiarities remained the same, but those particular chords of the instrument were irretrievably broken."

From all of the foregoing it is plain that the

work accomplished by vibrations from the outside world, as they come over the afferent nerve to the cell at the end of the nerve and then react over the efferent nerve, perform a very important work.

Just how sensations are made, and just what they are, and just how they prepare the special brain areas to perform each its special function, no one claims to know. It is one of the mysteries of mind. No physiological change takes place in the formation of the gray matter after repeated sensations have resulted in the special area being able to perform its required function.

The most powerful microscope does not reveal any change as to the physical construction of the brain, but that a psychical change has taken place, or a psychical property or attribute has been added, is plain, for where before certain efforts are made and certain vibrations are received a given brain area will not function, whenever a certain vibration is brought to bear upon the brain and repeated, as for instance an effort to learn a given language, the mind will be able to express itself in that language.

It will be able to do this, however, through one certain set of brain cells only. If later these are damaged, the power to express self in that language is destroyed, though full power to express self in a different language is retained.

The business of sensating, then—the work of the individual in seeing to it that his brain receives

as many classes of sensations as possible—is a very important one.

Education, from an intellectual standpoint, resolves itself into the problem of brain-area development, which in turn depends upon the power of the mind to sensate.

At this point in his studies one danger confronts the student. If not careful, he may be led to the false belief that all sensations are external as to origin. That is to say, he may come to think that all thoughts arise from external causes, that the source of all intellectual power is from vibrations purely material in their nature and coming from the outside world.

This is not true. Sensations are of two kinds, (1) external or objective, and (2) internal or subjective.

Physiological—that is, external or objective—sensation is defined by Webster as “an impression, or the consciousness of an impression, made upon a central nervous organ through the medium of a sensory or afferent nerve, or one of the organs of sense.”

This same authority quotes Locke, an eminent metaphysician, concerning inner or internal sense, as follows:

“It is the capacity of the mind to be aware of its own states; consciousness; reflection.

“This source of ideas every one has wholly in himself, and

though it be not sense, as having nothing to do with external objects, yet it is very like it, and might properly enough be called internal sense."

Broadly defined, and not limiting sensation to the effects created in brain matter by external vibration, Webster defines sensation as "a state of excited interest or feeling, or that which causes it."

That which causes a state of excited interest or feeling may arise from internal sense. It may be caused by a conscious act of volition, arising within consciousness or from the process of pure reason when the consciousness is entirely shut off from the outside world, and the receipt by it of vibrations from external objects rendered impossible.

Hence, Webster states: "Sensation properly expresses that change in the state of the mind which is produced by an impression upon an organ of sense, of which change we can conceive the mind to be conscious without any knowledge of external objects."

The awakened and conscious soul of man operates both from without and from within. Sensations are both external (arising from without) and internal (arising from within).

This phase of sensation will be treated more thoroughly in Lesson Seven, when we study the Science of Volition Development and the philosophy of the human will. Just here we are to confine our study almost wholly to sensations arising from the

outside world, and caused, or made to happen, in the gray matter of the brain, by vibrations from external sources.

We thus explain, however, the fact of the existence of the internal sense and subjective sensations to guard the student from the otherwise likely false impression that external vibration is the exclusive source of thought processes.

It is more than likely—indeed, practically certain—that the soul or self, the sum total of human consciousness, if utterly deprived of all mental nourishment resulting from external sensations, would very soon mentally starve to death, and could not continue its habitation of the physical body, regardless of the existence of internal sense and subjective sensations. It is, therefore, impossible for us to overemphasize the importance of training the mind to use the physical senses to the end of sensating accurately with them.

Sensations used by the physical senses are at the foundation of the highest form of intellectual processes. They form the foundation of reason; they are the raw material out of which thoughts are made.

Sensations, then, are the base of the pyramid of thought. They are literally the foundation of thought building. It is as impossible for any one to become an individual of ability, to possess a high degree of intellectual capacity, without consciously or unconsciously developing the power to

sensate accurately as it would be for him to build a substantial house without first building a solid foundation.

The trouble with John, the senior lumber clerk discussed in Chapter I, began right here. He did not sensate clearly. William did, and William got the job. William was building more areas in the gray matter of his brain than was John. He was doing this by reason of one simple but tremendously fundamental fact—he was sensating more accurately than was John.

In our next chapter we shall witness the growth of sensation, the first stage in the process of thinking, as it evolves into the second process necessary for thought formation.

Summary

First. Other things being equal, the ability of the individual varies directly with his capacity to sensate.

Second. The sure road to the science of psychology is through the science of physiology.

Third. Four important facts from the science of physiology are:

1. The gray matter of the brain is the connecting link between mind and matter.
2. This gray matter of the brain is where the nerves which carry vibrations to the source of consciousness terminate.
3. All nerves are arranged in pairs. The nerve

fibers that carry vibrations to the gray matter are the **afferent** nerves and those which transmit the vibrations from the center outward are the **efferent** nerves.

4. Definite brain areas through which consciousness operates are caused by the repeated action of vibrations coming to the seat of consciousness, and the reaction upon this nerve center which sends the impulse or current out again over the efferent nerve.

Fourth. These areas are organs of the mind through which it perceives and functions in sight, hearing, touch, taste, smell, speech, motion, and in everything that the mind as a whole does.

Fifth. The perceiving self employs special areas of the brain for special purposes, and these areas are divided and subdivided.

Sixth. Written or printed words are seen by the mind in one area, other things in another area. Spoken words are heard by the mind in one area, other sounds in a different area.

Seventh. Just what sensations are, how they are made and how they prepare the special brain areas to function, is not known.

Eighth. If the brain area which records spoken words ceases to be nourished by the blood, the power of speech is destroyed, and so with all special areas.

Ninth. It is highly important to provide that the

brain shall receive as many classes of sensations as possible in order to develop the brain areas; and to supply the brain with the right amount of pure unpoisoned blood that the several areas may function properly.

Tenth. Education, or the proper nourishment and proper use of the intellect, becomes the problem of brain-area building.

Eleventh. Brain-area building depends upon the power of the mind to sensate.

Twelfth. Sensations are of two kinds: (1) external or objective; (2) internal or subjective.

Thirteenth. A sensation is a change in the state of mind arising from an external cause or from an internal cause.

Fourteenth. In this lesson our study is confined almost wholly to sensations arising from the outside world.

Fifteenth. External vibration is not the exclusive source of thought processes.

Sixteenth. But as all knowledge arises with sensation the soul or self would soon mentally starve if deprived of the nourishment resulting from external vibrations.

Seventeenth. Sensations are the foundation of thought building.

Eighteenth. Hence the great importance of training the mind to use the physical senses to the end of sensating accurately.

CHAPTER III

IMAGES

IN OUR studies thus far we have learned that when sensations impinge upon the screen of consciousness, which we have found to be the gray matter in one's brain, they cause a certain effect to take place, and this effect is known as **sensation**.

We have studied with care the process of the development of sensation, and thereby the literal building of faculties in different areas of the gray matter of the brain.

What are images? The effect of repeating a sensation upon a given area of gray matter in the brain causes a second effect to take place, and this effect is known in the science of thinking as an **image**. In other words, the result of repetition of sensation gives to the perceptive faculty of the mind a second power.

1. The perceptive faculty perceives the existence of a sensation.
2. It perceives an image.

The word image comes from the Latin word **imago**, meaning "an imitation." It is defined by the Oxford Dictionary as "a thing that represents

or is taken to represent something else; an optical appearance or counterpart of an object."

This describes exactly the effect which always happens when a sensation is repeated frequently enough.

The sense of sight illustrates this exactly. When I (which is my consciousness) see the tree in front of my study it is the result of the vibrations coming from the tree, until the effect produced in a certain area of the gray matter of my brain has created sensations, which finally result in the power of my mind to perceive what the thing is which has produced the sensations.

The sensations persist until an optical appearance of the tree finally takes place in my mind, and this optical appearance is what is known as an image.

It is an imitation, a mental copy, a likeness, a picture, an optical counterpart of the object from which the vibrations come.

At this point the sensations have become changed into a purely mental effect, which effect—provided the sensations are distinct enough—is an exact reproduction in the mental world of the thing in the objective world from which it came.

First. When the mind perceives a sensation it is then in the first stage of thinking. Sensation is the first faint dawning of the light of consciousness—the gray of the very early dawn.

Second. The mind perceives an image of the thing sensed, a mental reproduction of the thing from which the vibrations traveled which caused the sensations which in turn caused the image. It is now in the second stage of thinking.

There are five kinds of images, determined by the physical senses through which the sensations are created in the gray matter of the brain:

1. Visual images, or those created by the sense of sight.
2. Auditory images, or those created by the sense of hearing.
3. Tactual images, or those created by the sense of touch.
4. Olfactory images, or those created by the sense of smell.
5. Gustatory images, or those created by the sense of taste.

The richer the sensations the clearer the image, and then the clearer the thinking power.

The way, therefore, to begin to think clearly is to sensate accurately in order to get clear, rich images.

The more of the physical senses used in sensating a thing, the richer the image will be.

It is a law of life that the clearness of the image of anything varies directly with the richness of the sensations which caused the image.

An illustration. Let us suppose an individual who

until twenty-five years of age had lived in a country where no apples were grown.

Let us suppose that at the age of twenty-five he visited relatives in an apple country, and for the first time his eye fell upon an apple.

Under these circumstances he will get a visual image of the apple when he looks at it, but the image will not be very rich.

He picks the apple from the tree and thus touches it. He finds out how it feels, and thus gets a tactual image of it.

He lets it fall to the ground, and thus gets an auditory image of the sound of apples falling to the ground.

He smells of it, and thus gets an olfactory image of an apple.

He then eats the apple, and gets a gustatory or taste image of apples.

With each of these processes the richness of the sensations and hence the clearness of the image is increased. Any one who does n't pay close attention to things which come within the range of his activities will not get rich sensations of them, and then he will not have clear and accurate images. This will fog his thinking, and he will not be a clear thinker.

In our previous chapter we have made it plain that sensations are the raw material out of which thoughts are made.

Images are the second stage of development in the manufacturing process of thought making.

Every step must be taken carefully if the completed product is to be good.

At this stage of thought development, the perceptive faculty becomes very active; the perceiving or seeing power of the mind is becoming active. The first gray dawn, the perception of sensation, has now changed to that brighter light of the image, a mental picture of the thing from which the vibration comes that causes the sensation.

Mental sight necessary to perceive images. The more receptive the mind is to truth, the better it perceives images and all other mental contents. But sensations plus images do not equal knowledge.

It is entirely possible for one to have a sensation of a thing, and an image of it, and yet not **know** much about it. He may not even know what the thing is. He simply knows it is, if he has reached the age when he can think, but knowing a thing is, is quite different from knowing what it is, its various parts, its uses.

The baby begins to receive sensations from the moment it first draws the breath of life. At first, however, its perceptive faculty does n't operate at all. The soul of the child merely possesses the power to perceive, but the power is as yet latent; it is undeveloped. Vibrations do not yet result in images.

Any one can prove this by moving objects before the eyes of a new-born baby.

At first the eye of the infant will not follow the object. The eye is there with its optic nerves, both afferent and efferent, and with the little cells connecting them. The vibrations from the object being sensated are traveling over the afferent nerve, and will keep it up until there is a nervous reaction over the efferent nerve, but in the beginning the eye of the mind of the little child does not perceive the effect that is being caused to happen in the gray matter of its brain.

The mental eye is not yet working.

It takes several sensations at this, the beginning of the development of the perceptive faculty, to have the effect of enabling the seeing mind to perceive the sensation. And then the completed sensation has to be repeated several times before the eye of the mind can perceive the picture of the thing causing the sensation—in other words, perceive the image of it. But keep on with the experiment, and very soon the eye of the baby will follow the object.

This means that the area of the brain through which the mind sees is now sufficiently developed so that the mind of the baby has taken a picture of the object, and this is the image.

There are many grown-ups who look a great deal but do not see very much.

That was exactly the trouble with John, the senior lumber clerk. He looked at the logs, but he didn't know much about them after he had looked.

There are a great many who hear a good deal but do not understand what they hear. This was another trouble with John.

The president had asked him to go and see if any logs came into the yard the night before. But he apparently didn't hear that the president really wanted him to see, not just look. At least, he didn't see; that is, his mind's eye didn't see with clearness. Therefore but little of the light of knowledge concerning the general situation got into his mind.

When people look but do not see, and hear but do not understand, this means that they have as yet failed to train their minds to perceive an image properly.

There is a vast difference in people as to their sensating and imaging power. One salesman will see twice or three times as much, and understand twice or three times as much concerning the needs of a customer by simply being in his presence, as another, with exactly the same set of circumstances surrounding each.

The difference in their ability to see and understand begins with the difference in the way they sensate, and perceive images.

The following diagram will illustrate the two first stages in the development of the faculty of thinking:

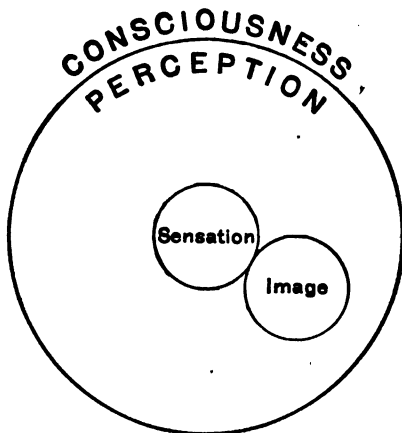


FIG. 2

As before, the large circle represents the sum total of human consciousness; the area comprised within it is the faculty of perception; the central circle as before represents sensation.

But we now have a second effect resulting from the power of the individual to sensate—namely, the power of the perceptive faculty to perceive an image, or likeness of the thing sensated.

But in order to know what an image is, a third effect must take place in the mind, and this brings us to a consideration of the third step in the evolu-

tion of the faculty of thinking, which will be considered in our next chapter.

Summary

First. When a sensation is repeated frequently enough the effect is a mental image.

Second. The mental image of sight is a mental copy, likeness, or picture of the object from which came the vibrations.

Third. If the sensations are distinct enough, the effect is an exact reproduction in the mental world of the thing in the objective world from which the vibrations proceed.

Fourth. The mind first perceives a sensation—this is the first stage of thinking.

Fifth. Next, the mind perceives an image of the thing sensed.

Sixth. There are five kinds of images corresponding to and determined by the physical senses:

1. Visual, or images of sight.
2. Auditory, or images of hearing.
3. Tactual, or images of touch.
4. Olfactory, or images of smell.
5. Gustatory, or images of taste.

Seventh. The way to begin to think clearly is to sensate accurately in order to get clear, rich images.

Eighth. Images are the second stage of development in the process of thought making.

Ninth. When a man looks but does not see, hears but does not understand, he has as yet failed to train his mind to properly perceive an image.

Tenth. People differ greatly as to their power to sensate and to perceive images.

Eleventh. This difference in the power to sensate and to perceive images is the fundamental cause of the difference in ability to see and to understand.

CHAPTER IV

CONCEPTS

THE mind of the little baby has perceived many images of many different kinds before it knows anything about the images perceived. The light of consciousness is dawning, but it is still very early morning. The sun has not risen yet, when the mind is still in the process of perceiving images only.

Many grown-ups sense many objects and perceive many images of them but do not in reality know much about the many more or less indistinct images.

Two people take a trip through a foreign country, traveling together the whole way. When they return one knows much more about the things he has seen and heard and sensed in other ways than the other, who enjoyed exactly the same opportunities for gaining knowledge.

Two young men get a position with the same firm at the same time in the same department. One will soon have much more real knowledge concerning the business than the other.

In each case the difference between the two people began away back at the foundation of knowledge—sensation—and continued naturally to

the second stage, the forming of the images resulting from a repeated sensation.

But it does n't stop there. It continues right on to the third stage in the growth of the tree of thinking, which is the forming of what is known in the science of thinking as **concepts**.

What is a concept? The word concept comes from the Latin roots **con** (together with) and **ceptum** (take), meaning "to take or lay hold of, to take to oneself, to take with."

A concept is the result of the perceptive faculty of the mind having done three things:

First. It has perceived several images of a certain thing.

Second. It has become able to give a name to the image, tag it, as it were—put a mental label on it. It then knows what the mental picture is.

Third. The perceptive faculty has also considered this named image "together with" other like images, until it has perceived that it belongs to a general class. It then names the class to which each of many like images belongs, and every time it gets an image of that class it mentally labels the image as belonging to its particular class.

An illustration. When the man who sensated and got an image of the apple saw, touched, smelled, heard, and tasted his first apple he formed an image of that individual apple, and that individual image was "an apple."

But there are different kinds of apples—some are

sweet and some are sour; there are apples that ripen early and apples that ripen late; there are different varieties of apples. And Mr. Brown does n't know enough about apples to take the third step necessary for forming thoughts about apples—to have a real concept of them—until he has perceived a certain relationship between different kinds of apples and other fruits and knows that all fruit of a certain kind can be labeled “apple.”

Then, and then only, has he the concept “apple.”

The faculty of the mind to get an image—a mental picture—of any one apple is called its **power to image**. When the mind's perceptive faculty mentally sees that all fruits of a certain kind can be labeled “apple,” then the concept is born in the mind.

The concrete before the abstract. The study of anthropology throws some interesting light on this subject. It has been discovered by anthropologists that in the development of language among primitive peoples words for particular objects and things are invented long before the appearance of generic terms for the class to which the particular object or thing belongs.

That is to say, in the early stages of the development of language there will be a word for every kind of tree with which the members of the group are familiar, but no general word for tree itself. So there will be a special word for every animal

known to the people, but no class name for animals in general. Very often the name of some particular object will ultimately be applied to all objects of that class.

It is the same with verbs. Words expressing specific actions come into use long before verbs expressing general states of action or being are invented. Primitive peoples simply do not have these general or abstract mental concepts, and so they have no words for them until a higher stage of development is reached, the concept is formed, and the need is felt for giving it a label.

Thus the word "is," representing the abstract condition of being in general, was not born until the concept itself was formed and the need was felt for a word to describe it.

Long before this, however, the specific verb "to breathe" (*spirare*) appeared. Men and animals breathe; the fact was noted, and the concept given a label. Then later the concept was born that all things that breathe "exist." And still later another step in the formation of concepts was taken, and the still more general and highly abstract word "is" was formed.

This third accomplishment of the perceptive faculty is a natural result flowing from repetition of images.

We have seen that concepts are class names.

There are different kinds of class names, not alone

of things but of qualities; also class names expressing quantities, and class names expressing activities and relationships, or modes.

All concepts represent either (1) things or objects, or (2) the quality, quantity, or mode of the object perceived.

Concepts are therefore either (1) concrete, or names of objects, like **man, horse, cow, steel, iron, tree, rock**, or (2) abstract, the abstract concepts being represented by words which express quality, quantity, or mode.

Common nouns stand for concrete concepts.

Adjectives, verbs, adverbs, conjunctions, prepositions, and interjections—all of which involve either quality, quantity, or activity or relationships, that is, mode—represent abstract concepts.

It is possible for one to have an abstract image and still not have a concept of what the image stands for as a general class.

An illustration. The first time the infant sees the color red he does n't know how to name that particular effect. He does n't even know that it is color. But finally he names all different shadings as color, and a certain color as red, and knows that all things with a certain color are red things. He then has the abstract concept "red."

The color red is a mode concept, since it represents the mode in which rays of light striking upon the surface of an object are refracted from it.

The child also gets abstract concepts expressing quantity, such as "large," "little," and so on; he also gets abstract concepts expressing quality, such as "good," "bad," "indifferent."

Further examples of mode concepts are those expressing some phase of activity, as "run," "walk," and the like. In fact, all verbs represent mode concepts.

Man's thought power dependent upon the number of concepts in mind. The richness of one's mind may be said to depend upon the number of concepts he has in his mind.

This does not necessarily represent the power of the mind to do, because the concepts may not be well organized, or, if organized, may not be used, but it is a law of life that, other things being equal, the capacity of the individual to think clearly varies directly with the number of concepts he has in his mind.

Concepts are the stuff that thoughts are made of.

A concept is the unit of knowledge in the mind, just as the drops of water may be said to be the units of water in the lake.

Just as surely as there are only so many drops of water in any particular lake, so there are only so many concepts in any one person's mind.

Just as there are more drops of water in one lake than in another, so there are more concepts in one mind than in another.

Just as the volume of water in a lake depends upon the number of drops of water in it, so the size of your mind depends upon the number of concepts it contains.

The adding of concepts to one's mind, therefore, may be said in one sense to be the secret of increasing mental capacity. It is, therefore, of prime importance in the faculty of thinking.

Man expresses his concepts largely through the power of speech. And he is the only creature that has this power. It is a fundamental power separating man from the brute creation.

From the foregoing it is apparent to the student that the intellectual man power possessed by any given individual is dependent largely upon the number of concepts he has in his mind, that this depends in turn wholly upon the number of images he has perceived, and that this in turn depends upon how richly he has sensed things.

The perceiving of concepts is thus seen to be the third process through which the raw material of thought—sensation—must be passed in the manufacture of thoughts.

The roots and trunk of the tree of thought. To change the figure, we may say that the images are the tender sprouts out of which thoughts grow from the acorn of sensations, while the concept is the sprout developed into the root, and added one to another these finally make not only the root but the trunk of the tree itself.

However, neither the sprouts nor the roots constitute the tree as a whole, including its branches.

In the language of the science of thinking, which you are now studying, even concepts are not thoughts, any more than the roots of trees are trees.

The sensation may be likened to the acorn from which an oak tree grows, the image to the sprout, and the concept to the roots and trunk, but while the acorn, the sprouts, the roots, and the trunk are all essential to the formation of the tree, something else must be added to make the tree. The branches are needed to make the completed tree.

The next necessary thing which the faculty of perception must add to the completed concept in order to form the first branch of the tree of thinking—a definite **thought**—will be made plain in our next chapter.

We may now represent the truths gleaned thus far as to the faculty of thinking, by the diagram on page 78.

The mental processes thus far analyzed have not arrived at thought. While concepts are the units of thought stuff—the raw material out of which knowledge is builded—concepts are still not thoughts.

We have seen that concepts are what we might term “seasoned images.” To make our meaning entirely plain, we might say that the image is the brick when it is first made. But fresh-made bricks

cannot be constructed into houses. The brick has to be hardened—seasoned.

The hardened, seasoned, mental brick, image, becomes a concept when the mental eye (perception) has at last perceived enough relationships concerning similar images to name and classify a given

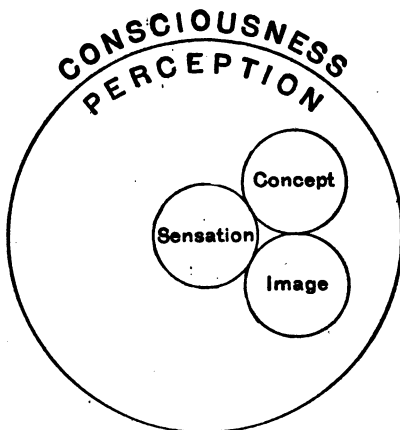


FIG. 3

image and give it a class name. Then, and only then, the freshly made mental brick—the image—has become sufficiently seasoned to be used in thought building.

Just how this is done will be made plain in our next chapter.

Summary

First. The third step in the growth of the tree of thought is the forming of concepts.

Second. In forming a concept the mind does three things:

1. It perceives several images of a certain thing.
2. It names the image.
3. It perceives that this image is like certain other images, and then places the like images in a single class.

Third. The class is then named, and this name is the expression of the mental thing—the concept.

Fourth. All concepts are representative of (1) classes of things or objects, and of (2) the quality, quantity, or mode of the object perceived.

Fifth. Concepts are therefore (1) concrete, as **man, boy, horse, cow, iron, metal, tree, rock**, or (2) abstract, as **green, red, large, little, good, bad, run, walk**.

Sixth. Concepts are the stuff thoughts are made of, and, other things being equal, the capacity of the individual to think clearly varies directly with the number of concepts he has in his mind.

Seventh. The number of concepts in mind depends upon the number of images perceived.

Eighth. The number of images perceived depends upon how richly the mind has sensated the thing.

Ninth. The acquiring of concepts is the third step in the manufacture of thoughts.

Tenth. Though concepts are the units of thought stuff, they are not thoughts.

Eleventh. The three steps thus far taken in the process of building thoughts are : sensations, images, concepts.

CHAPTER V

IDEAS

AT THIS point in our study of the science of thinking it is advisable to inform the student exactly what is meant by the word "idea" as used in this Science of Business.

All students of philosophy are aware that the word idea is used very loosely, each author employing it to express what it means to him.

The word "idea" defined. The Century Dictionary gives nine definitions of "idea" and Webster's New International contains eleven definitions of this word. The fifth definition in Webster's and the sixth in the Century come nearest to the sense in which the term is used in this science, but no one of the twenty definitions there found exactly expresses the meaning that we attach to the word.

The Century Dictionary says (6) an idea is "an opinion; a thought, especially one not well established by evidence"; and Webster's Dictionary says: (5) "a notion, thought, or mental impression."

Neither of these definitions is adequate to our purpose. An idea is truly a thought; but it is not any thought whatever, for it is a very particular kind of a thought.

An idea may or may not be well established by evidence. It may be absolutely true, it may be partially true, or it may be wholly erroneous. For it may be a mere opinion.

We define the word idea as follows: "An idea is the mental result which comes from perceiving a relationship between two concepts, or between an image and a concept."

The relationship may be absolutely true, or it may seem to the percipient to be true; that is, a man may be mistaken in forming ideas just as he may be mistaken in forming the higher order of judgments. Fortunately it is easier to correct erroneous ideas than it is to reform unsound judgments.

The student now knows just what is meant by the term "image." He also knows exactly what is meant by the term "concept." Let him use his own power of perception and he will see clearly what is meant by an idea being the mental result arising from a perception of a relationship between two concepts, or between an image and a concept.

An idea the simplest form of thought. Words are the signs of images and of concepts. Images and concepts may be expressed as separate words; but it takes a particular combination of words to express an idea. This particular combination of words expressing an idea is called by the grammarians a **simple sentence**, and to the logicians it is known as a **proposition**.

An idea, then, is the simplest form of thought.

As such it is in the mind. When expressed vocally or in writing we clothe it in connected words, forming a sentence, wherein one term (the predicate) is either affirmed or denied of the other term (the subject).

An idea we call a **thought of the first degree**. It is, in fact, a minor judgment. But it is considered advisable to confine the word idea to the elementary perception of relations between concepts and images or between two concepts, and reserve the word judgment for the higher perception of relations obtained by deductive or inductive reasoning.

When expressed, the idea is a simple statement of apparent fact.

An illustration. "Dogs bark" is an idea. It consists of two concepts—first "dogs" and second "bark." "Dogs" is a concrete concept; "bark" is an abstract concept; the two united make the idea.

"Ice is cold"; "fire will burn"; "rain is wet." These are all ideas resulting from a union of concepts.

An example of ideas born of uniting images and concept is "This horse eats." We have seen that any one particular object represents an image; so the first part of the statement "This horse eats" represents an image. The word "eats" is a class name, and therefore a concept. The statement is an expression of a true relationship between the image "this horse" and the concept "eats."

"This glass is white" is the expression of an idea

made by uniting the image "glass" and the concept "white."

Every idea is a thought. It is a thought which is expressive of the individual's judgment about some thing. It is the statement of an apparent or of an absolute truth as to relationships between concepts or between images and concepts.

The first branch of the tree of thought. An idea, as the term is used in this Science, is the simplest form of thought. All ideas are thoughts of the first degree.

To carry out the figure which we utilized in our last chapter, of the formation of the tree of knowledge, we might say that while concepts form the root and trunk of the tree of thought, because they are the units in the tree of thought just as atoms are the units out of which the physical tree is builded, the expression of a **thought**, on the other hand, is the first **branch** of the tree of thinking.

The material universe—objective things in the great outside world—is, then, the soil in which the tree of thought grows.

Sensations are the acorn from which the oak tree of the faculty of thinking grows. Images are the tender mental sprouts coming from the mental acorn of sensation. Concepts are the solidified units developing from the sprouts of sensation and gradually forming the root and trunk of the tree.

Concepts are to the tree of thinking what the atoms of wood are to the roots and trunk of this

tree out in front of my study. The atoms combined make the substance of the wood of the tree. If there were no atoms there could be no wood. They, united or combined, make the body of the tree. This tree out in front of my study has not only roots and a trunk, but it has many branches.

As to the tree of the faculty of thinking, it has only four branches, and the first branch is the **idea** branch.

The child mind is forming thoughts. The first branch of his tree of thinking has begun to grow when the child utters a sentence, as "Mamma talks."

The child uses words before it uses sentences. When it first uses words it has images only; later it expresses concepts.

When it uses its first simple sentence, like "Mamma talks," it expresses an idea.

We may represent the idea stage in the development of thinking by the diagram on page 86.

A brief study of the diagram makes plain the fact that just as images grow out of or are the result of repeated sensations, and as concepts are the result of repetition of images, so ideas are born of the repetition and combination of concepts and images.

Ideas, technically speaking, or thoughts of the first degree, while essential to the higher realms of thinking, constitute nevertheless the lowest order of thought as thought.

We are now ready to consider the result which

comes from the power of the mind to perceive relationships between ideas, which constitute the second branch of the tree of thought, upon which, figuratively speaking, grow thoughts of the second degree.

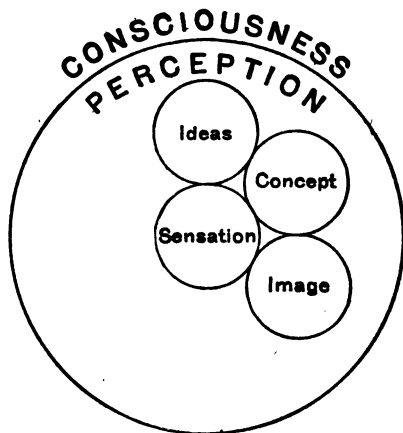


FIG. 4

Summary

First. An idea is a thought.

Second. An idea is the mental result from perceiving a relationship between two concepts or between an image and a concept.

Third. This relationship may be true or it may only seem to be true.

Fourth. The idea when expressed in words takes the form of the simple sentence or proposition.

Fifth. An idea is the simplest form of thought.

Sixth. We call an idea a thought of the first degree.

Seventh. The tree of the faculty of thinking has only four branches, and the first branch is the **idea** branch.

Eighth. Words express images and concepts.

Ninth. Words united into sentences express ideas.

Tenth. The order in development of mental content is (1) sensations, (2) images, (3) concepts, and (4) ideas.

CHAPTER VI

THE SECOND BRANCH OF THE TREE OF THINKING: JUDGMENT

Other things being equal, the ability of the individual varies directly with his capacity to form sound judgments.

THE word "judgment" is not so loosely used or given so many different meanings by various authors as is the word idea.

Root and definitions. Its Latin roots indicate its true meaning, as the term is used in the Science which you are now studying. It comes from the Latin *judicare*, which in turn is derived from *jus* (right) and *dicere* (to say or speak).

Judgment is defined by the Oxford Dictionary in various ways, but each of the several definitions given by this great authority is so suggestive, and states facts concerning this important faculty of the mind so clearly, that we shall give the student the benefit of studying several of them.

Among the rest, we find the following definitions:

1. "The pronouncing of a deliberate opinion upon a person, place, or thing; or the opinion pronounced."
2. "The formation of an opinion or notion con-

cerning something by exercising the mind upon it."

3. "The faculty of judging; ability to form an opinion; that function of the mind whereby it arrives at a notion of anything."

4. "The action of mentally apprehending the relation between two objects of thought."

5. "Good or sound judgment" is defined as "discernment, discretion, wisdom, understanding, good sense."

The above definitions express the exact meaning of judgment as the Science of Business uses that word.

Sound and unsound judgments. It does not require much mental effort to form ideas. To simply unite concepts, or images and concepts, does not require a high order of intellectual capacity, but when we come to the second branch of the tree of thinking it is quite a different matter.

Here the perceptive faculty has much more important work to do. It has to form an opinion or notion concerning something by exercising the mind upon it. This is a splendid exercise.

Here at this stage of mental development the individual has the opportunity to bring to bear upon his mental processes the use or exercise of the process involved in education or "eduction."

If this mental exercise of forming judgments is "correct" use, it results in the formation of good or sound judgments, and then the one so using or

so exercising his capacity to judge correctly comes to be a man of discernment, discretion, wisdom, understanding, good sense—in a word, a man of good discrimination, which, as we have seen, is a potent factor in determining the quality of all that he says and does.

But, unfortunately, there are two kinds of judgments, sound and unsound.

We might put it this way:

The limb of the tree of judgment has two branches upon it, and one of them is not sound. It is like the decaying limb of a tree—not safe to be trusted.

It is a dangerous thing to sit on the limb of a tree that is in a state of decay, or to hitch the rope of a swing to it. If one does, he will get a fall, and very likely be hurt.

It is just so in climbing the tree of life. If one regulates his actions by the influence of unsound judgments, he will fall down; he will not attain the realization of a progressive ideal, no matter how worthy that ideal may be.

Judgments are arrived at through the power of the mind to perceive relationships:

1. Between two ideas.
2. Between an idea and a judgment.
3. Between two judgments.

If the ideas or the judgments concerning which the relationship is perceived are sound, and the

exact truth is perceived concerning their relationship, then the resulting judgment is sound.

There are four kinds of unsound or bad judgments:

First. Mistaken or false judgments, due to faulty perception in the forming of the ideas or judgments compared. This failure to perceive correctly may be due to a physical defect in one or more of the five physical senses.

Second. Hasty judgments. This term is used to describe unsound judgments due to lack of attention in forming one or both of the thoughts of the first degree.

Third. Prejudiced judgments. This is one of the most common of unsound judgments, and is due to lack of consideration of surrounding ideas in forming one or both of the thoughts of the first degree.

Fourth. Illogical judgments. These are due to erroneously combining the thoughts of the first degree used in forming the judgment.

The forming of judgments, or thoughts of the second degree, marks the dawning of the power of reason in man.

Reason is defined by the Oxford Dictionary as "the guiding principle of the human mind in the process of thinking."

The power to reason soundly is indeed a great

guide, and exercised in its threefold function, the first of which is the forming of sound judgments, will guide one to the realization of his worthy ideals. There is no greater "reducer" of the need of supervision, and therefore "increaser" of efficiency value.

There are few, if any, greater causes of errors, and therefore of need of supervision, and reduction of efficiency value, than mistaken judgments, hasty judgments, prejudiced judgments, and illogical judgments.

The art of forming correct judgments is the result of the power of the mind to perceive correct relationships through the perception of likenesses and differences.

The basic reason why the late James J. Hill, who was a king in his class, was a master in efficiency was because of the soundness of his reasoning power, his vast store of common sense or good judgment concerning railroading. The same is true of the late Marshall Field in the world of wholesale and retail merchandising.

The reason why these men possessed the power of forming such sound judgments was because their knowledge was born of actual experience, each in his respective line. Each started at the bottom and worked his way to the top. Their minds were rich in images and concepts, because they had sensated every phase of the business in which they were engaged.

The young man just out of college can make no

more serious mistake than wanting a swivel-back chair and a managerial position at the start. He cannot possibly perceive true relationships between the ideas which must be formed out of concepts and images unless he has the concepts and images out of which to form them, and can perceive them clearly in his mind.

And he cannot do this unless he has first built into his mind a goodly store of the raw material out of which images and concepts are made—namely, sensations.

The manager of the greatest company of its kind in the world once said to the author of this Science: "Give me a man of perfect judgment—if such a thing were possible—and it would make no difference if his arms and his legs were cut off, and we had to go and get him in the morning, bring him to our place of business, and take him home at night. If the one faculty of judgment were perfect he could command almost any salary he cared to name. The service he could render our company would be almost invaluable."

From the above facts we see with clearness the importance—aye, the necessity, if one is to become a clear thinker—of training the mind to perceive correct relationships between ideas, and therefore to form sound judgments.

No one can possess real ability without this power to form sound judgments.

The study of the faculty of judgment, or power

of the mind to perceive correct relationships between ideas, and how to train it, will be taken up extensively in the textbook accompanying this lesson. Just here our object is to make plain to the student exactly what his mind does when it thinks, and the forming of correct judgments is one of the most important things that it has to do in the entire range of the exercise of thinking.

Important as it is, however, it constitutes only the second branch of the tree of thinking—the judgment branch, upon which grow thoughts of the second degree.

The following diagram represents this element of mental contents when added to those already described.

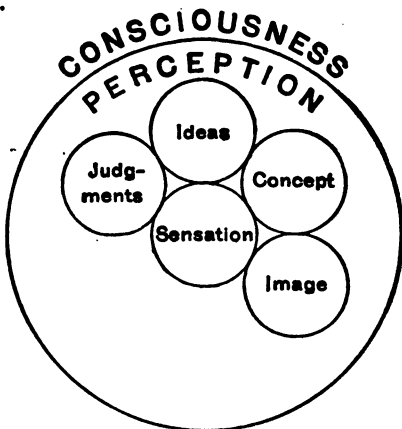


FIG. 5

A study of the above diagram enables the student to see that just as images grow out of sensations, concepts out of images, ideas out of concepts, so judgments grow out of ideas.

The mental capacity to form sound judgments, important as it is, will not alone make the highest possible degree of intellectual power.

The capacity of the mind to form sound judgments, which, as we have seen, is nothing more nor less than the power of the mind to mentally see or discern correct relationships between two ideas, is an essential factor, an absolutely necessary part of constructive intellectual power, and it forms the first of three steps in the power to reason.

But it is n't the highest possible power of the mind's intellectual capacity.

The power to form correct judgments alone will not raise man's intellectual capacity to the nth power, or highest possible degree.

The eye of the mind, the perceptive faculty, possesses the power—or can acquire it through the correct nourishment plus correct use process—to discern relationships not alone between two ideas. It can acquire the power to mentally visualize or see with clearness many ideas and sound judgments, look them over, examine them mentally with minuteness, and come to perceive or mentally see a relationship common to each of the group of many ideas and sound judgments.

A sound judgment, as we have seen, is simply the perception of a correct or true relationship between two ideas or between two other judgments.

A still more valuable element in intellectual power is the perception of a relationship between several correct judgments or ideas.

And to perceive such a common relationship between many sound judgments or ideas is to perceive a law.

The power of the mind to perceive laws will be made plain in our next chapter.

Summary

First. The first branch of the tree of thinking is the forming of ideas.

Second. The second branch of the tree of thinking is the forming of judgments.

Third. Judgments are formed by perceiving a relationship between two ideas; between an idea and a judgment; between two judgments.

Fourth. Judgments are either good or bad, sound or unsound.

Fifth. A good or sound judgment results from perceiving the exact truth concerning the relationship of the ideas or judgments compared.

Sixth. There are four kinds of bad, or unsound judgments: (1) mistaken judgments; (2) hasty judgments; (3) prejudiced judgments; (4) illogical judgments.

Seventh. Judgments are thoughts of the second degree.

Eighth. The capacity to form sound judgments comes from the power to reason soundly.

Ninth. Reason is the guiding power of the mind in the process of thinking.

Tenth. No one can possess real ability without the power to reason correctly and to form sound judgments.

Eleventh. The perceptive faculty rises to a higher power than merely to discern relationships between ideas or between two judgments.

Twelfth. The perceptive faculty can discern a relationship between many ideas or many sound judgments—and thus it finds a law.

CHAPTER VII

LAWS

Other things being equal, the ability of the individual varies directly with his power to perceive laws.

IN CHAPTER VI we learned that a judgment is the perception of a relationship between two thoughts, while a law is the perception of a relationship between several thoughts.

Let us illustrate the mental process by means of which laws are perceived, by an example:

Six sound judgments. Mr. A. is a driver of a grocery wagon. As a result of his daily experiences, his mind perceives the following facts:

"When I get an early start I am on top of my work all day. But when I get a late start, my work is on top of me. When I am on top of my work, I not only enjoy it better but my employer is always better satisfied with my services. Therefore it is to my best interest to always get an early start."

In arriving at this opinion or conclusion, this man has formed a sound judgment, which we will call sound judgment No. 1.

Again, he has perceived the following facts:

"When I make it a rule to call at every house I

come to on my route, I make more sales than when I skip some. The more sales I make, the higher my degree of self-respect and self-satisfaction. But the good results do not stop there. I find also that the more sales I make, as a result of calling at every house and not skipping any, the better satisfied my employer is with my services. Therefore I will call at every house on my route each day."

This is sound judgment No. 2.

As a result of his experience, he reasons further as follows:

"When I track mud into the house my customers are displeased, and often become so much dissatisfied that I lose their patronage. When I lose the patronage of a patron I find that I lessen the degree of satisfaction which my firm has in me, and thereby injure my own best interests. Therefore I will make it a rule not to track mud into the houses of my customers."

This is sound judgment No. 3.

As a result of his experiences, he has also perceived the following set of facts:

"Whenever I am late in making my deliveries my customers do not like it, are not satisfied, and I often lose trade on this account. Whenever I lose trade I diminish the satisfaction which my house has with my services, and lessen my value. Therefore I will make it a rule always to be prompt with my deliveries."

This is sound judgment No. 4.

Again, he reasons as follows:

"Whenever I make mistakes and deliver something other than that which was ordered, my customers are dissatisfied, and I sometimes lose their trade. When I lose trade on account of being inaccurate I lessen the satisfaction of my firm in me, and my service-rendering power, and thereby decrease my value. Therefore I will always be accurate."

This is sound judgment No. 5.

Once more, he reasons after this fashion:

"Whenever I am not cheerful I diminish my enjoyment in my work and am therefore less efficient. Furthermore, gloominess of disposition on my part lessens the satisfaction and confidence of my customers in me, and, indirectly, in my house. Therefore I will cultivate a spirit of cheerfulness in my work."

This is sound judgment No. 6.

Formulating a law. The grocery deliveryman who really **thinks** will form many sound judgments such as those just given, and will act accordingly, and will govern his life accordingly. If he trains his perceptive faculty highly enough he will be able to discern or mentally see a relationship common to all of these and many more sound judgments of a similar class.

To illustrate:

First. "I will always get an early start."

Second. "I will call at every house on my route each day."

Third. "I will make it a rule not to track mud into the houses of my customers."

Fourth. "I will make it a rule always to be prompt with my deliveries."

Fifth. "I will always be accurate."

Sixth. "I will cultivate a spirit of cheerfulness in my work."

What relationship can you perceive which is common to these six judgments?

A little careful thought will reveal the fact to you that there is one common element, namely, **satisfaction**, and the satisfaction of the one who is buying the goods of the deliveryman, namely, the firm by which he is employed.

Further careful thought will reveal another element common to all these judgments, an element which we may term **efficiency**.

The exercise or putting into practice of each of the six judgments in order to give satisfaction required efficiency on the part of the man exercising the judgments.

From these two relationships, common to the six judgments, his mind can perceive, or develop the power to perceive, the following law:

My power to give satisfaction varies directly with my efficiency.

His mind has now perceived relationships not only between two judgments, to the end of forming

a third judgment, but it has also perceived relationships common to each of several judgments, and thus has perceived a law.

This power to perceive laws is the second step in reasoning and constitutes the third branch on the tree of thinking, upon which grow thoughts of the third degree.

This power of the mind may be illustrated by the following diagram:

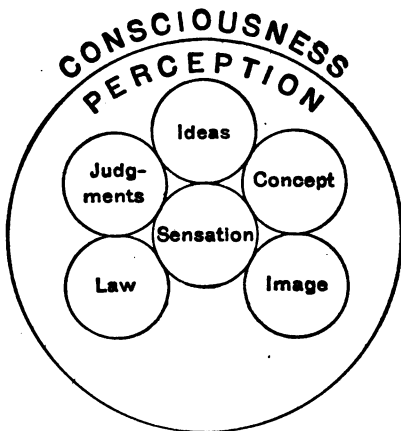


FIG. 6

A study of the above diagram will make plain to the student the following facts:

First. Images are the result of the perception or interpretation on the part of the mind of sensations.

Second. Concepts result from the power of the mind to correctly interpret, name, and classify images.

Third. Ideas are the result of the mind's power to perceive relationships between concepts.

Fourth. Sound judgments are the result of the mind's power to perceive correct relationships between concepts or between concepts and images.

Fifth. Judgments are the result of the power of the mind to perceive correct relationships between two ideas or two judgments.

Sixth. Laws are the result of the mind's power to perceive correct relationships between each of many sound judgments or ideas.

The student will note, however, that the above figure still seems incomplete.

It not only seems incomplete: it is incomplete. Something is lacking. When that something is supplied it will be complete. And what that something is will be made plain in our next chapter.

Summary

First. A law is the result of the perception of a relationship between several thoughts.

Second. The power to perceive laws is the second step in reasoning.

Third. This power is the third branch on the tree of thinking.

Fourth. Thoughts of the third degree are laws.

CHAPTER VIII

PRINCIPLE

THE student is already familiar with the meaning of the word principle.

A principle is a law, but it is the highest form of law; it is a fundamental law rather than either a primary or tributary law, as those terms are used in this Science.

Primary and tributary laws are discerned through the seeing of likenesses and differences between ideas and sound judgments.

A fundamental law or principle is discerned through the mental process of the mind's seeing likenesses or differences between primary and tributary laws.

A principle is the source, cause, general rule from which primary and tributary laws are derived and to which they are related. To discern a principle means to discover the cause or source of the laws related to it.

For example, when the driver of the grocery wagon had discerned the law, as outlined in Chapter VII, that his power to give satisfaction varied directly with his efficiency, it would be entirely possible for him to go ahead and reason out many laws

from the facts that his sound judgment had enabled him to determine. Among the rest, his mind would doubtless perceive that his profit-making power varied directly with his efficiency.

The inquiring mind. The mind that forms sound judgments, compares them, and discerns laws, is always an inquiring mind. It is frequently asking itself "Why?"

It would be but natural for such a mind to begin thinking on the question of the relationship between profit and satisfaction.

Among other facts, the possessor of such a mind would find out that the better his firm was satisfied with his services the more they could and would pay him, up to the limit of commercial feasibility or earning power in his particular work.

As a further result of his intensified thinking, or perception of relationships between facts, he would perceive that the better his customers were satisfied with his services the more profitable the business grew by reason of the repetition of patronage.

He would find that it was a law of Nature that, other things being equal, the permanency of patronage varies directly with the satisfaction of the customer.

Wondering and searching for the reason why, it would be but natural that his mind would perceive relationships common to each of many of the laws. He would perceive many laws in which the con-

cepts "profit" and "satisfaction" would both enter or be elements, and from this perception of relationships common to many laws it would be but natural that his mind would perceive the principle upon which this Science was founded, namely:

The power of the individual to secure progressively profitable patronage varies directly with his power to render permanently satisfactory Service.

When his mind has developed the power to perceive relationships common to several laws, and thus get at Nature's reason back of universal laws, then the mind has perceived a principle.

This is as high as the human mind can go in thinking. It is the third step in reasoning, and the reasoning mind can take but these three steps in reasoning:

1. The perceiving of sound judgments.
2. The perceiving of laws.
3. The perceiving of principles.

The mind which has attained the power to perceive principles has attained the *n*th power in thinking, for the simple reason that all the mind can do in the entire process of thinking is:

1. To perceive sensations.
2. To perceive images.
3. To perceive concepts.
4. To perceive ideas.
5. To perceive judgments.

6. To perceive laws.
7. To perceive principles.

The science of psychology sometimes puts it this way: "The mind can do five things in thinking: (1) sense, (2) image, (3) form concepts, (4) ideate, and (5) reason."

And in reasoning the mind does three things:

1. It perceives judgments.
2. It perceives laws.
3. It perceives principles.

Mental contents. To the end of complete clearness, let us enumerate mental contents. Let us take an inventory of the intellectual part of consciousness, and the inventory reads as follows: (1) sensations, (2) images, (3) concepts, (4) ideas, (5) judgments, (6) laws, and (7) principles.

The student must note the fact that through it all is the work of the mind's eye—**perception**.

Each of these mental contents is the result of perceiving. It is the direct result of the mind's seeing likenesses and differences and relationships.

The clear-thinking mind is the perceiving mind—the seeing mind.

John, the senior clerk in the lumber office. The perception of laws and principles was a thing almost if not quite unknown to John's mental life.

His lack of power did not stop there.

His trouble began away back at the foundation of the pyramid of thought, for he did not sense

clearly, richly, accurately. He looked at the logs which had been brought into the yard the night before, but he did n't **see** very much. He did n't perceive many facts when he looked.

Vibrations came from the logs to his consciousness. They created a sensation, out of which grew an image of the logs. Of course, he had concepts about logs, but he failed to work those concepts up into such ideas as the following:

1. Logs were brought into the yard last night.
2. Twelve carloads came in.
3. Seven carloads are oak.
4. Five carloads are maple.

These were all facts easily discernible on the part of any one who would not only look but who would bore a hole into things by really perceiving facts, which are relationships between things.

William, John's assistant, when asked by the president of the company to see if any logs had been brought into the yard the night before, did exactly as the president asked. He not only looked, he **saw**, for he had developed the faculty of seeing with the mind's eye, of perceiving facts concerning the things looked at.

He looked at exactly the same objective things that John had looked at, but he saw at least four times as much. He perceived at least four times as many facts concerning the things he looked at as John did.

Under these circumstances, the natural inference is that William's power to form sound judgments, perceive laws, and perceive principles was greater than John's, and therefore that he had a much higher degree of intellectual power.

This is a wholly natural inference, and therefore sound reasoning, for the very simple reason that sound judgments, laws, and principles all rest upon the one base of sound or true ideas, which in turn depend upon clear images, which in turn depend upon richness of sensation.

The seven circles of perception. The sum of mental contents may be represented by the following figure:

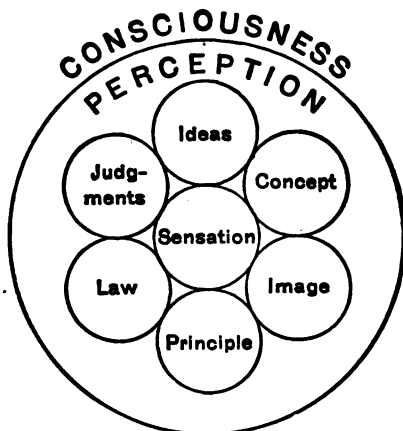


FIG. 7

The student will at once perceive that the figure is now completed. Nothing is lacking.

And it is completed, for the simple reason that there are no other mental contents. Sensations, images, concepts, ideas, judgments, laws, and principles make the sum of the mental contents of any human mind as far as his intellect is concerned. The minds of some individuals contain more sensations, more images, more concepts, more ideas, more judgments, more laws, and more principles than other minds, but the entire contents of any human consciousness can be classified under these seven divisions.

The capacity of the human consciousness. There is one characteristic of human consciousness which should be carefully noted by the student at this point.

Its capacity is boundless. The well of consciousness can never be filled to overflowing.

The more of each of these classes of mental contents any given mind perceives, and therefore has as a part of its permanent possessions, the greater its capacity to receive.

Herein human consciousness differs from any other receptacle in Nature.

Any given pail will receive only a given amount of water. When it is once filled, if more is added it will run over.

This is not true of human consciousness. Its

expansiveness is limitless. And upon what does the expansiveness of human consciousness depend primarily?

In final analysis, it rests upon a basis of sensation, plus the use or exercise of the will.

To perceive—to have the power of perception, the power to mentally see or perceive—rests upon the will to perceive, impelled by the desire for knowledge.

It now remains for us to state briefly at this point, and intensively in the textbook accompanying this lesson, the way to develop the capacity, power, or faculty of receiving and perceiving the seven kinds of mental contents enumerated.

Before doing this, however, we are going to consider the other two faculties which, combined with thinking, make ability:

1. Remembering.
2. Imagining.

We deliberately postpone our instructions for the training of the power to think, until we have made plain to the student the mental processes involved in remembering and imagining, for the very simple reason that these three basic faculties, which developed make Ability, are so interrelated that the doing of a few fundamental things trains each and all of the three.

Our next chapter will therefore begin the study of the remembering faculty.

Summary

First. A principle is the highest form of law.

Second. A principle is the source of primary and tributary laws.

Third. To discern a principle is to discover the cause or source of related laws.

Fourth. The mind that forms sound judgments, discerns laws, and discovers principles is an inquiring mind—it frequently asks “Why?”

Fifth. The truly inquiring mind capable of forming sound judgments and discerning laws and principles will naturally come to perceive the principle upon which this Science is founded.

Sixth. This Science is founded upon the principle: The power of the individual to secure progressively profitable patronage varies directly with his power to render permanently satisfactory Service.

Seventh. The third step in reasoning is perceiving a principle.

Eighth. The reasoning mind can go no further. In perceiving or discovering a principle it has reached the limit of its powers.

Ninth. The entire process of thinking involves seven steps: (1) Perceiving sensations, (2) perceiving images, (3) perceiving concepts, (4) perceiving ideas, (5) perceiving judgments, (6) perceiving laws, and (7) perceiving principles.

Tenth. Mental contents are (1) sensations, (2) images, (3) concepts, (4) ideas, (5) judgments, (6) laws, and (7) principles.

Eleventh. Each of these mental contents is the result of perceiving.

Twelfth. The clear-thinking mind is the mind that perceives likenesses and differences and relationships.

Thirteenth. Human consciousness is boundless; the more it receives, the greater its capacity to receive.

Fourteenth. The power to mentally see or perceive rests upon the will to perceive, impelled by the desire to know.

CHAPTER IX

REMEMBERING

IN THE beginning of this book on Ability Development we learned that any one who rated high in three mental faculties would necessarily be a man of ability. These three were:

1. The capacity to think things out clearly.
2. The capacity to remember well.
3. The capacity to imagine.

In other words, we found that to be a man of ability one must have:

1. A good thinker.
2. A good rememberer.
3. A good imaginer.

As a result of our study of the first eight chapters we have come to see clearly the mental processes involved in thinking, and are now able to name each of the seven kinds of mental contents.

We are now ready to study the faculty of remembering things—in other words, what may be termed Memory Development.

The object of this is to enable one to develop what is commonly called “a good memory.”

The workshop and the storehouse of the intellect.
The three intellectual faculties upon the develop-

ment of which ability depends may be likened to three parts of a factory.

The thinking capacity is the workshop. It is the place where raw materials are taken in and worked up into the different kinds of completed articles which that particular faculty makes.

And as we have seen, the intellectual factory of every human being, when it is working in the best possible order, manufactures seven different kinds of things: (1) sensations, (2) images, (3) concepts, (4) ideas, (5) judgments, (6) laws, and (7) principles.

It is true that a great many "think-shops" stop with the manufacture of judgments, even at that making a good many unsound judgments. But a fact in Nature which is intimately related to this subject of memory training which we are now beginning to study, and which the student should perceive with clearness, is this, that the best "think shop" in the world, working at full capacity, can manufacture only the seven kinds of mental contents described up to this point in our studies.

Our study of the subject of memory now brings us to the question, "What does consciousness do with these seven kinds of mental contents after they are manufactured? Where does it store them?"

At the close of our last chapter the statement was made that it is impossible to fill consciousness to overflowing. This being the case, the "think

shop" must have a big storeroom in which to store its manufactured products. And this storehouse of consciousness is the **memory**.

We don't need to spend much time in dwelling upon the value of a good memory. However, that the student may come to perceive clearly the value to him of developing the faculty of remembering, let us dwell for a moment upon the dangers of the opposite or destructive quality of forgetting.

Illustrations of forgetting. A switchman had forgotten to close a switch, and a great express train was wrecked. Just because one man forgot to do one thing at one time, many lives were snuffed out, and thousands of dollars' worth of property destroyed.

"I forgot" has caused the loss of millions of lives and billions of treasure. It has caused wars with all their horrors, because a man forgot to do the right thing at the right time. In the daily routine of business it is one of the greatest enemies of success.

Forgetting has been the direct cause of the loss of millions of positions.

The tendency to forget is one of the destructive intellectual attributes which is the source of thousands of errors, especially errors of omission. It is one of the causes of need of supervision, which in turn causes decrease in efficiency value.

The salesman forgets his customer's name. The customer may be somewhat sensitive on that point,

especially if his name is a little peculiar, and the fact that the salesman forgets his name often costs the loss of a sale.

The next salesman who comes along remembers the customer's peculiar name. The exercise of this constructive faculty of remembering begets the customer's confidence, and "Confidence is the basis of trade."

The stenographer forgets to make important inclosures in letters. This gets the unfavorable instead of the favorable attention of those who receive the letters, and the reverse of the mental law of "securing" is put into operation.

The salesman forgets a strong selling argument at just the point in a close, hard-fought battle for business when he should have presented the argument, with the result that the sale is lost. The next salesman makes the point that his predecessor forgot, and makes the sale at a good profit.

The salesman forgets an important appointment until it is too late to get there on time. This gets the unfavorable attention of his prospective patron, so when the salesman finally arrives he is tremendously handicapped.

The young man seeking a position forgets to brush his clothes, polish his shoes, attend to his nails, and get a shave before calling on his prospective employer. He does n't get the job, and wonders why.

You forgot to meet small obligations promptly, to

repay personal loans, to mail that catalogue you promised, to send the messenger with those samples which Mr. Big-Business-Man asked for at the club last night. These tendencies repeated impress your business acquaintances unfavorably and gradually destroy your power to secure progressively profitable patronage.

Your stenographer forgets the initials, street address, or telephone number of people you do business with. This causes you to lose much valuable time and gives useless annoyance. You therefore conclude it would be a good investment to pay some one else twice as much if you could only find some one who does n't forget—in other words, one who has a good memory.

When one bears in mind the truth that efficiency value depends upon the degree of supervision one's work requires, and that the better the memory the less supervision the work will need, it follows that memory is indeed a most valuable business asset.

Value of a good memory. A good memory vastly increases one's power as to both quality and quantity of Service rendered, as well as potently influencing for the better his mode of conduct.

This is a faculty capable of wonderful development.

It is claimed by some historians that Themistocles of Athens could call 20,000 citizens of Athens by name.

Cyrus had a big army, but it is reported that he knew the name of every soldier in that great army.

Washington, Grant, and Napoleon had developed to a wonderful degree the faculty of remembering names, and it was an important element in their successful leadership.

“I have a poor memory” is a common complaint.

The facts are that everybody has a good memory; that is, a good storehouse in which to store mental contents. The trouble with the one who says he has a poor memory is that he has failed to develop the faculty for remembering things—the faculty to re-member.

“Remember” defined. The word remember comes from the Latin *re* (again) and *memor* (mindful).

Webster defines it as follows: “To be capable of recalling when required; to keep in mind; to preserve fresh in the memory.”

The above definition describes exactly the proper function of the faculty of remembrance—the power to remember.

To have ability one must be capable of recalling sensations, images, concepts, ideas, judgments, laws, and principles “when required.”

To have a high order of ability he must not only receive these seven kinds of mental contents above enumerated, but he must be able to “keep them in mind,” and be able to call them back out of the storehouse of memory into the “think shop”—his

factory, his working mind—when he wants to use them, and thus convert them into usefulness.

He must have the ability to preserve them “fresh in the memory,” not let them become stale through keeping them in the storehouse too long.

Perception. Our study of the mental processes involved in remembering is much simpler than the study of the processes involved in thinking, although an analysis of them reveals another group of seven.

In other words, there are just seven things that the mind must do in order to stand the second test for ability development; namely, the faculty for remembering accurately. And the first thing one must do is to perceive clearly.

Here we are brought face to face with our old friend “Perception,” which we found traveling with us all through the processes involved in thinking. The processes of memory, like those of thinking, all have as their background or fundamental necessity this faculty of perception.

We shall therefore represent this faculty as a circle, all of which we shall call “Perception.”

The next question for us to determine is what must one do to perceive a stored mental content? That is to say, what must he do to re-member—make it a member of his active “think shop” again? What must he do to reinstate the stored mental contents in consciousness?

Receiving and recording sensations. To make sure of having the ability to do this—to recall the stored mental contents when required—there is a first condition that the student must very carefully fulfill at the time any one of the mental contents comes into consciousness.

He must give it a good reception.

He must receive it right, and in order to do this he must concentrate his attention upon the sensation, image, concept, idea, judgment, law, or principle which he wishes later to recall.

So, then, there is a condition precedent for proper receiving, namely, concentrated attention, undivided attention. And we shall name this faculty for giving undivided attention, **concentration**.

The word concentration is derived from the Latin **con** (with) and **centrum** (center). The meaning of mental concentration then, as the term is used in this Science, is the centering of all of one's mental faculties upon a certain thing at one time.

In our previous study we learned that the word attention means "earnest direction of the mind, consideration, regard."

A careful study of this question of remembering reveals this fact in Nature: that sensations, images, concepts, ideas, judgments, laws, and principles are very particular as to what reception they get.

If the consciousness wishes to make them willing servants who will come readily at beck and call of

the will, they insist upon getting the right reception when they are received.

They simply demand undivided attention; they demand of their recipient his concentrated attention; they demand on his part an exercise of what we may term the faculty to concentrate, or the faculty of concentration.

A natural effect resulting from the receiving of mental contents through the agency of concentrated attention is the proper recording of the thing received.

Let us use as an illustration the first process involved in the "think shop"—sensation. If the sensation is received in the right way, if the perceptive faculty is really giving that particular sensation its undivided attention; in other words, if it is concentrated on that sensation when it is received, then the sensation will become recorded rightly. It will make a real impression upon the gray matter of the brain, which, as we have seen, is the receiver of sensations and therefore the "screen" of consciousness.

If, on the other hand, the perceptive faculty is giving more or less attention to other sensations, or dividing its attention between this particular sensation and some image, concept, idea, judgment, law, or principle already stored away in consciousness, then the particular sensation, which is perfectly willing to become accurately recorded upon the

screen of consciousness, will inevitably become offended and refuse to make a deep impression.

The effect of concentrated attention, when the gray matter is receiving a sensation, as far as the accurate recording of that received sensation is concerned, may be likened to the effect of the writer of words bearing down hard upon the paper with an indelible pencil. He makes a record of his thoughts upon that paper, through the words he writes, which will not be easily erased and which can be readily found when wanted.

The record made when impressions are being received on the gray matter of the brain through sensations, and when scatteration is employed by the perceptive faculty instead of concentration, may be likened to the mark that the same writer would make with a dull lead pencil pressed but lightly upon the page.

Manufacturers of records used by the phonograph know in advance that the records manufactured would be useless unless the sound vibrations were concentrated with all their force upon the pliable wax upon which they are to be recorded. No conflicting sounds are permitted to interfere.

It is a law of both animate and inanimate life that,

Other things being equal, the accuracy of the record made by vibrations varies directly with the degree of concentration.

The basic reason why people who have difficulty in recalling names do have that difficulty is because they fail to obey this law of Nature—the law of concentrated attention—at the time of the presentation of any given name to their consciousness. Thoughts of other things or of other people are permitted to intervene. They are not giving that particular name the right reception, and therefore it is impossible for it to be recorded aright.

We may represent the facts arrived at thus far by the diagram on page 125.

We now have the process of remembering traced through two stages, as a result of concentrated attention, namely:

1. Receiving.
2. Recording.

Retaining sensations. But receiving and recording are not enough to insure remembering; the thing recorded must be retained.

You have frequently made an accurate record with an indelible pencil, but lost the record. You did n't retain the record.

The art of retaining any given mental content, once it has been received and recorded right, in such a way that it can be found readily when wanted, is a most interesting process.

As we have seen in Chapter II, the brain has certain areas which act as pigeonholes for storing images, concepts, ideas, judgments, laws, and princi-

ples. These pigeonholes, or mental cells, are located in the gray matter of the brain—the screen of consciousness.

In this plastic stuff the vibrations from the outside world literally write themselves, in a manner very similar to, if not indeed almost identical with, the way the sound-wave vibrations are written in the wax of the phonograph record.

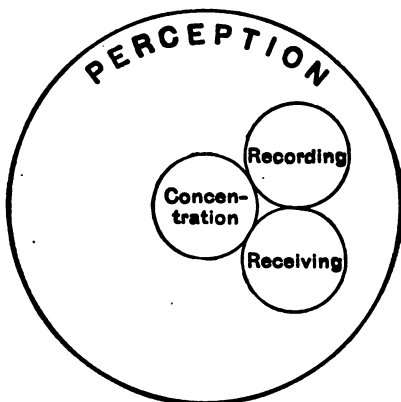


FIG. 8

If well received and recorded, the perceptive faculty not only perceives them clearly at the time but retains the completed product for future reference. It retains the record; it stores its mental relationships, conclusions, and discernments of likenesses

and differences between original mental contents—the images perceived from sensations.

It stores them away in its storehouse of memory, and apparently when it again perceives them it brings these purely mental, non-physical things back to the particular brain area where their manufacturing began on the surface of the gray matter of the brain.

This must be true, for reasons which we have seen in Chapter II. The first requisite, therefore, for receiving and recording, and the process we are now considering—retaining—is to keep the gray matter in good condition. If that is not done, one cannot have the best power to remember.

Granted that condition, then science long ago discovered that the mind's natural process for storing away mental contents in such a manner that they can be retained and then recalled when wanted, is to associate each mental content with another which has been brought back so many times that its paths—the route over which it travels, both afferent and efferent—are well made.

When one once calls out the well-disciplined mental contents, the one newly acquired which has been associated with it comes trotting along too, just as, if you make a pet of the bell wether of a flock of sheep and train him to come and go when wanted, the other sheep will follow.

This is called the law of association.

Its operation may be likened to tying mental strings to things you wish to remember as you put them away in the storehouse for the purpose of retaining them.

Importance of the law of association. I quote from Dr. Krebs' textbook, which accompanies this lesson, as follows:

"The law of association is so important that it has been compared in the sphere of mind to what the law of gravitation is in the physical universe—the force by which all things are held together in relations or associations. Wundt, the great German psychologist, goes so far as to assert that without association there can be no consciousness at all.

"The law of association is this: All connections once set up between any of the mental contents *tend to persist* and to reproduce themselves.

"That this is a fact—a natural fact in mind—can easily be proved, for it is the universal experience of mankind.

"When one thing is thought of, another thing immediately follows it into the mind. Note what you are thinking of now, and ask yourself how that thought entered your mind. You will see that something (a preceding thought or sensation) suggested it. It had its antecedent link. No thought stands alone. It always has its relations, the same as we do. No man was born isolated; he was born into relations, from relations, and by relations. Exactly similar is it with thought or ideas—with all mental contents."

Speaking of the power of recall, Dr. Krebs continues, as follows:

"Stated in terms of physiological psychology, we would say that recall is the power to refunction possessed by any group of brain cells.

"When a key is struck on the piano, a tone is enregistered upon a group of cells in the auditory center of the brain, and whenever thereafter that group of cells functions (stirs, acts) we remember that tone.

"That group can be caused to stir or act either by striking the same key again—that is, by an external stimulus; or by an act of the will—that is, by an internal stimulus.

"This is called 'cell memory.' The subject of cell memory is a great subject indeed. Its study shows that there really is no such thing as absolute forgetting; that all things—words, acts, thoughts, events—are enregistered permanently somewhere."

The above is just a little hint of what the student of this Science has in store in the study of the textbook on "Remembering," accompanying this lesson. This will treat thoroughly the law of association, which law is intimately related to all of the processes involved in remembering.

Just here we shall content ourselves with seeking to attract the favorable attention of the student to the importance of this law, and to that end shall give one instance of how the law works when put into practice.

A study of the law of association shows us that there are what we might term five strings to the bow of association, one of which is "Correspondence."

Putting the law of association into practice through correspondence means to hitch any given sensation, image, concept, idea, judgment, law, or

principle up to another which is perfectly well known to your perceptive faculty, and which is like the new one just being sensed.

For instance, you are introduced to a man by the name of Wells. Instead of doing that which so many do who complain of having a poor memory—merely glancing at him and only imperfectly sensing his physical features—if you obey the law of association you will concentrate your attention upon his features, or rather you will give the vibrations coming from him to you a chance to concentrate themselves by becoming receptive to them and giving them a chance to register.

As you are doing this, you try to think of some one else who looks like this man Wells. You can almost always think of some one of whom Wells reminds you.

When you do this, you are hitching the image of Wells up to another well known image, and assisting your mind to retain this image.

But you don't stop there. You wish to remember his name, too. So, while you are receiving and recording the face and form, you associate his name with a similar word. For instance, you note the fact that Wells looks "well," if he really does, and thus associate his physical condition with his name. Then, when you recall his well photographed image, it will be easier to name the image.

If he does n't look "well," you could still use the

law of correspondence or similarity by imagining yourself pulling him out of a well.

Imagine that he has fallen into a well and will surely drown if not rescued by yourself. You are, in fact, pulling him out of the well by the hair of the head. Then, when you recall the image of Wells, you cannot very well help remembering his name.

Five aids to memory. Besides "correspondence," there are four more bows to the string of association; or, to put it another way, four more kinds of strings with which you can tie any new mental content up to another which is well trained to come back when you want it.

The five in all are as follows:

First. Correspondence, an example of which we have already given.

Second. Contrast. The mind tends to remember a thing if associated with something directly contrasted to it. For instance, riding behind a fast horse is very likely to cause you to remember some very slow horse that you once rode behind.

Third. Contents, or the relationships between the whole of a thing and a part of it. For instance, you think of "knob," and it will recall the concept "door."

Fourth. Contiguity. Link anything that you want to remember up with something which

is near that thing, and it tends to help you to retain and recall the image. For instance, think of Chicago, and you will very likely think of Lake Michigan.

Fifth. Cause and effect. Having discerned any given effect, tie it up to its cause before storing it away, and it will help you to recall it.

These five aids to memory are sometimes referred to as "the mental dumbbells." The use of them will be thoroughly explained in the textbook referred to, which must be considered a part of our instruction in the science of thinking.

Recalling and recognizing sensations. To have a good memory, then, one must develop the capacity or power not only to receive right, and record right, but to retain and to recall the recorded thing right.

It is quite possible to fulfill the first two conditions, namely, Receiving and Recording, and still not be able to retain and recall the record readily when it is wanted.

It is absolutely impossible to find it with the greatest possible facility unless the preceding steps are taken right.

But the point we wish to impress is that the recorded record, rightly received, must be retained and recalled readily in order that the individual may stand the test of remembering accurately.

But this alone is not enough. When the mental

content is recalled into consciousness, another "R" is necessary, namely, recognition.

The thing recalled must be recognized—re-cognized—which means that the perceptive faculty must readily recognize its old acquaintance.

It would be quite possible for one to recall an old friend by letter—one from a foreign land, for instance—whom he had not seen for years, and not re-cognize him—recognize him—upon his arrival, unless away back at the beginning of his first acquaintance he had properly sensed and visualized that acquaintance.

It is just so with mental contents of each of the seven kinds. In the absence of the perceptive faculty doing its work right in the matter of insuring richness of sensation, and therefore clearness of image and accuracy of concepts, it is liable to "fall down" in this process of memory known as recognition.

Our diagram for illustrating the processes involved in any act of remembrance, or the exercise of the faculty of remembering, now looks like the one shown on page 133.

An analysis of this diagram reveals the fact that the diagram is still incomplete. One more process is evidently needed in order to have Nature's processes for remembering things completed.

Restoring sensations. We find that there is one and only one process lacking when the conditions

of (1) right receiving, (2) right recording, (3) right retaining, (4) right recalling, and (5) right recognizing have been taken care of.

Any given mental content, after it has been received, recorded, retained, recalled, and recognized by the perceptive faculty, must be **re-stored** in such a way as to insure that the perceptive faculty can

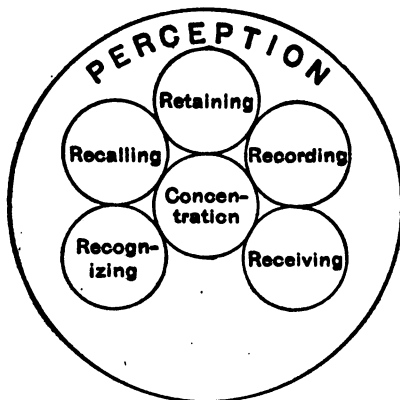


FIG. 9

find it again when it is wanted. It must re-store it in the "hall of Memory," in a pigeonhole where it can be found when wanted the next time.

This is accomplished through the law of association, already referred to in connection with the process of retaining. Study it thoroughly in the textbook accompanying this lesson.

Our diagram is now complete, and this is how it looks:

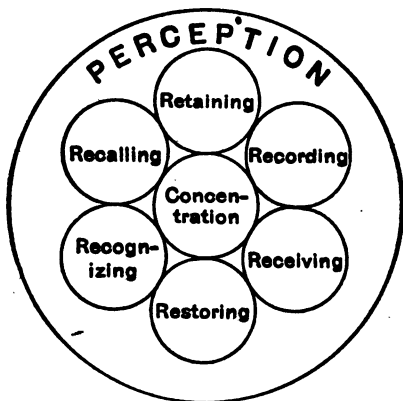


FIG. 10

We now understand all of Nature's processes involved in the exercise of both thinking and remembering, two of the three faculties which, when developed, make Ability.

It now remains for us to consider the third faculty—imagination—after which we shall conclude this lesson with instructions concerning the actual work of developing the three faculties.

Our next chapter will begin the consideration of the imaginative faculty.

Summary

First. The man who rates high in ability is a good thinker, a good rememberer, and a good imaginer.

Second. The thinking capacity is a workshop where are made or may be made sensations, images, concepts, ideas, judgments, laws, and principles.

Third. Memory is the storehouse of consciousness.

Fourth. Efficiency value depends upon the amount of supervision one needs in his work; the better the memory, the less supervision is needed.

Fifth. A good memory is a most valuable business asset.

Sixth. The good memory increases one's power as to quality and quantity of Service and constructively influences his mode of conduct.

Seventh. The faculty for remembering accurately involves seven mental steps.

Eighth. To store the perceived sensation, image, concept, idea, judgment, law, or principle, the mind must rightly receive it.

Ninth. The right reception calls for concentration, which is the centering of all of one's mental faculties upon the thing to be received.

Tenth. The result of receiving mental contents through the agency of concentrated attention is the proper recording of the thing received.

Eleventh. The record is made upon the gray matter of the brain.

Twelfth. The accuracy of the record depends upon the degree of concentrated attention.

Thirteenth. The thing recorded must be retained.

Fourteenth. The retention of the recorded thing depends upon the condition of the gray matter of the brain at the time of recording and thereafter.

Fifteenth. The natural and regular method used by the mind in recording mental contents so that they shall be retained and can be recalled when wanted is to associate each mental content with another.

Sixteenth. The power to recall mental content depends upon the law of association.

Seventeenth. There are five forms of association that aid the power to recall: (1) correspondence, or similarity of sound, appearance, etc.; (2) contrast, unlikeness or opposites; (3) contents, the part and the whole of a thing, or the container and the thing contained; (4) contiguity, or nearness in place or in time; (5) cause and effect, or antecedent and consequent.

Eighteenth. The recalled mental content must be recognized, that is, known again as the same thing that was received, recorded, retained, and recalled.

Nineteenth. Finally, the recognized mental content must be re-stored, that it can again be found when wanted.

CHAPTER X

IMAGINATION

THE imaginative faculty was rated by Spencer as the highest or greatest of the three intellectual capacities, thinking, remembering, and imagining.

It is true that man could have no imagination if it were not for the thinking and remembering faculties. But it is also true that one might have the capacity to think and the capacity to remember each highly developed, and yet never progress to any great degree.

The reason for this will be discovered by a careful study of just what the word imagination means in its scientific sense.

Professor Mark Baldwin of Princeton and Johns Hopkins universities defines imagination as "the process of forming new ideal combinations."

Dr. Krebs defines imagination as "the mental power to combine images into new images or concepts, and concepts into new ideas."

The important word in these definitions is the word "new." It is because the products of the imagination are new that they make for progress.

And note that Professor Baldwin states it is the

process of forming not only new combinations but "ideal combinations." Some one has truly said that the ideal thing is the most practical thing in the world, provided it is put into practice.

Value of imagination. The individual without the imaginative faculty developed is absolutely certain to get into a rut, and, as stated in Lesson One, there is only one difference between a rut and a grave—the one is wider and deeper than the other.

Cultivation of the imaginative faculty is an absolute essential for "the progressive realization of a worthy ideal," and hence an absolute essential for true success.

The imaginative faculty is the power which is back of initiative—the power to do things without being told; it is the great creative faculty of the mind.

Unless your interested attention has been previously directed to the faculty of imagination you may have looked upon it heretofore as one of the least desirable faculties for use in business life.

Many who do not understand the scientific meaning of the term look upon imagination as a kind of amiable weakness, and one that has nothing to do with success in business unless it is to ruin one's chances for success.

Many think of imagination as a special mark of primitive or uncultivated minds. Others vaguely rank it as a peculiar gift of artists, novelists, poets,

and dreamers. To them it calls to mind the thought expressed in the lines of Shakespeare:

"And as imagination bodies forth the forms of things
unknown,
The poet's pen turns them to shapes and gives to airy nothing
A local habitation and a name."

However, the truth about the imaginative faculty leads to very different views.

All progress is a direct result of the work of the imaginative faculty; all inventions are the creations of this mighty intellectual implement.

Triumphs of the imagination. Look about you on the present-day world. Think of the vast activities of agriculture, mining, fisheries, lumbering, hunting, and trapping; of milling, smelting, curing, manufacturing, and construction; of steamships, railways, electric roads, automobiles, and aëroplanes; of jobbers, wholesalers, retailers, specialty salesmen, and promoters; of the telegraph, the telephone, and the wireless telegraph; of cities, counties, provinces, states, and nations; of exploration, discovery, and development; of history, biography, fiction, poetry, painting, sculpture, architecture, music, and drama; of science, philosophy, and religion; in a word, of all that goes to make the present stage of civilization and progress.

And then think of primitive man, living in caves and holes in the earth; eating such wild fruits, nuts, leaves, and roots as he could gather; naked, or

clothed in leaves and grasses crudely strung together; walking, crawling, and swimming the short distances he traveled, carrying his possessions in his hand or on his head; communicating his rude thoughts by almost inarticulate cries; governed, if at all, by some other man stronger and more fierce than he; ignorant of all the great, round earth except the few acres where he lived out his cringing existence; and terrified by wild animals, by the phenomena of the weather, by the stars above him, even by his own dogging shadow.

The difference has all been wrought by the marvelous power of the human imagination!

Were that all, we should even now be tempted to place this seemingly invincible power at the very pinnacle of the functions of the mind of man. But great as are the achievements we have viewed, we must add another. These things we have seen are man's doings in the world outside of himself.

But some wise man has said that, in the world, there is nothing great but man. This being true, the grandest results of imagination have been wrought in man himself. It is by the aid of this faculty that man rises from ignorance, indifference, and gross vices to the physical, intellectual, and spiritual likeness of God.

In order to get a clear understanding of the process of imagination, let us go back to our figure of the mental factory. You remember that we

likened the knowing part of the mind, which we are now studying, to a factory—a thought factory.

In this factory we have discovered there are three departments, two of which are: (1) the thinking room, or mental workshop; and (2) the remembering room, or mental storeroom.

We now come to a consideration of the third compartment in the thought factory, the imagining room. This is the experimental laboratory of the factory. It contains also the designing department.

Materials used by imagination. You remember that sensations, images, concepts, and thoughts of the first, second, third, and fourth degrees were received and built by the workshop (the thinking room), and stored away in the storeroom (the remembering room), to be brought out into the workshop again, and there built into images, concepts, and thoughts of the various degrees.

But in every case, if you will examine carefully, you will find that the sensations were built into an image of the object, quality, or act as it actually was; that the images were put together to make a concept of the object, quality, or act as it actually was; that the concepts and thoughts of the different degrees were combined to represent relationships as they actually existed. In other words, the thinking power of the mind, in all its activities, does nothing but perceive things and thoughts as they are, and in their relationships to one another.

But in the experimental laboratory of the mental factory we are hampered by no such limitation. There the sensations, images, and concepts are brought out of the storehouse of the memory and put together in new ways.

Reconstructive imagination. Let us suppose that you are investigating the shoe business. You will call on the dealers in the town and ask them about the conditions of the trade. When they talk to you, they use among many other words: "shoes, boots, rubbers, leather, soles, uppers, vamp, tongue, heel, customer, salesman, stock, price, cost, profit, credit, cash, advertising, summer, fall, winter, spring, styles, sizes, patent leather, kid, calfskin, fine, second-grade, cheap, buy, sell, carry over, feature, list, discount."

Each of these words represents a concept in your memory storeroom. As each is pronounced the concept is brought forth into the imagination laboratory, where they are built together, not to form thoughts of various degrees about things as they are, but to make a mental picture of the conditions and events the shoe dealer describes. As a result of this clear mental picture you understand what is told you almost as well as if the sensations, images, concepts, and thoughts were the result of your own experience, wrought out in your mental workshop.

This process of making a mental picture of scenes, events, and conditions described, either or-

ally or in writing, by another, so that they become real to the hearer or reader, is called **reconstructive imagination**.

Constructive imagination. Now take another illustration. A certain man was once talking with a shoe dealer when a customer came in to buy a pair of shoe strings. As he paid for them, he complained that he had tried all kinds of shoe strings but had not been able to find any that would wear well at the kind of work he had to do—tramping around in the high grass and brush with a surveyor's transit.

After he had gone home the man began to think about shoe strings. Up to this time his thoughts about shoe strings had been after this order:

Concept. "Shoe string."

Concept. "Cotton."

Concept. "Linen."

Concept. "Silk."

These concepts were built into a thought of the first degree: "Shoe strings are made of cotton, linen, and silk."

Now, however, with the concept shoe string in the laboratory of the imagination he proceeded to bring out of the memory storeroom the concepts "wire, hemp, rubber, chain, calfskin, cowskin, pigskin."

Each of these concepts he then combined with the concept shoe string, thus:

"Shoe strings might be made of wire.

"Shoe strings might be made of hemp.

"Shoe strings might be made of rubber."

So he proceeded down the entire list of concepts.

As each new combination was made it was sent to the thinking-room workshop of the mind, there to be tested. These tests were made by the process which we have already described as the forming of judgments, or thoughts of the second degree, thus:

"Good shoe strings must be flexible.

"Wire shoe strings would not be flexible.

"Therefore wire shoe strings would not be good shoe strings."

In the same way the process of judgment showed him that hempen shoe strings would be too coarse, rubber shoe strings too elastic, chain shoe strings too rough or too expensive, calfskin shoe strings too weak, and cowskin shoe strings too stiff.

Then came, from the imagination laboratory, the new combination of concepts:

"Shoe strings might be made of pigskin."

In the workshop of the mental factory this was combined with thoughts of the first degree from the memory storehouse, as follows:

"Good shoe strings are flexible, smooth, tough, inexpensive, and strong.

"Pigskin shoe strings would be flexible, smooth, tough, inexpensive, and strong.

"Therefore pigskin shoe strings would be good shoe strings."

And so they proved to be, serving the public well and returning the man a profit on his new combination of concepts.

This is called constructive imagination. It is the process by which all inventions and improvements of every kind have been made. It is the process by which you get the power to do the right thing without being told—initiative.

Often, however—in most cases, in fact—the new combinations have to be tested not only in the mental workshop but in a material workshop or laboratory, or even in actual use.

Use of imagination in man building. Let us now examine another function of the imagination, taking again the example of the grocery salesman, reasoning out the fact in Nature that

The power of the individual to secure progressively profitable patronage varies directly with his power to render permanently satisfactory Service.

Taking this principle away from the storehouse of the memory and putting it into the laboratory of the imagination, one may bring a great many other contents of the storehouse out along with it. Of these he can construct a mental picture of himself developing Ability, Reliability, Endurance, and Action. As he fills in the details of this picture, it includes plans for study, reading, observation, right eating, right breathing, right exercise, and many

other things that go to make up the nourishment and use processes resulting in education.

This mental picture stimulates the positive feelings of desire to serve well; faith, responsibility, earnestness, and others—of which we shall learn more in our next lesson, that on “Reliability Development.” These thoughts and feelings act on the will, impelling it to decision and action. This we shall study in the lesson on “Action Development.”

As one pursues his studies and other methods for the development of Ability, Reliability, Endurance, and Action, his imagination draws for him a mental picture of himself as a man of large AREA—a success. One sees himself a prosperous man, serving the public to the end of satisfaction and the building of confidence, and therefore making a good profit. This mental picture fires the ambition, causes the individual to redouble his efforts, arouses courage, and gives to the will the great quality of persistence. Rapidly that mental picture, therefore, begins to become a reality.

The man begins to be what he has imagined himself to be.

Influence of imagination on health. Particularly strong is the influence of the imagination upon the health. As we shall see in the lesson on “Reliability Development,” there is a peculiarly close connection between the feelings and the bodily func-

tions and conditions. And the feelings in turn take their character from the thoughts that we think, especially from the kind of mental pictures constructed by and held in the imagination.

The man whose mental pictures are bright, cheerful, hopeful, courageous, and pure has the same kind of feelings. And such feelings tend to give him health, vigor, vitality, endurance, and strength.

Control of the imagination. Before leaving this subject, let me remind you of the law of opposites. For every constructive capacity, faculty, quality, and power, there is a destructive. And so, for the constructives of reconstructive and constructive imagination, there are destructives. These negative or destructive attributes arise from an uncontrolled imagination. We have seen how each new idea built in the imaginative laboratory was respectfully referred to the judgment. We have also seen how, in actual practice, such ideas are tried out by experiment before being finally passed.

Here is the test. The imagination, like a spirited steed, must be controlled by calm, careful, sound judgment. With a free rein, it runs away, resulting in two general kinds of destructive imagination:

First. Willful negative imagination. To this class belong falsehood and exaggeration, spoken, acted, and written; evil and lascivious imaginings—it is vicious mental pictures that lead men to vice, excesses, and crimes.

Second. Ignorant negative imagination. To this class belong wild, impossible, and impracticable schemes; unjust suspicions, jealousies, slanders, and recriminations; ill-founded fears and worries, resulting in cowardice, discouragement, depression, melancholia, and insanity; hypochondria, or falsely imagined disease, resulting in real disease, nervous weakness, and even death.

Every great and good gift, when misused, becomes a terrible curse. So imagination, the richest and most precious mental power in all man's splendid equipment, when uncontrolled becomes a veritable Pandora's box of ills.

Man's imagination has helped to lift him from the level of the brute to that of a god, has led the way to the revealing of the "hidings of power" in the majestic forces of Nature, has aided in penetrating the mysteries of creations so tiny that millions of them can colonize on the point of a needle, has winged the way for man's mind to suns and systems in the remote corners of space, so that he has weighed them in his balances and named the very elements of which they are composed.

And man's imagination has lured him to abysses of meanness, degradation, and loathsomeness from which the foulest beast would turn nauseated.

Can I exaggerate, then, the importance to the business-building salesman of realizing that confidence is the basis of trade, of controlling the

imagination, of developing positive imagination and overcoming all tendency to either willful or ignorant negative imagination?

Develop the constructive and reconstructive imagination. That is the way to send the destructive imaginings scuttling back to the blackness of darkness whence they came.

In the next chapter we shall study the practical means for the development of all the powers of the knowing mind—for they must all be developed together.

Summary

First. Imagination is the mental power to form new ideal combinations.

Second. It is because the products of the imagination are new that they make for progress.

Third. Imagination is the great creative faculty of the mind.

Fourth. All inventions are the imagination of man made visible and tangible in material forms.

Fifth. All human progress is the direct result of the work of the imaginative faculty.

Sixth. In man's thought factory the imagination is the experimental and designing department.

Seventh. The imagination is both reconstructive and constructive.

Eighth. The reconstructive imagination is that process of making a mental picture of scenes,

events, and conditions described either orally or in writing by another, so that they become real to the hearer or reader.

Ninth. The constructive imagination combines images and concepts in new ways.

Tenth. The value of imagination in man building is that the man begins to be what he imagines himself to be.

Eleventh. The imagination has a strong influence upon health.

Twelfth. The imagination must be controlled by sound judgment.

CHAPTER XI

HOW TO TRAIN THE FACULTIES OF THINKING, REMEMBERING, AND IMAGINING

WE have now learned what the mind manufactures with its thinking faculty, how it remembers its stored mental contents, and how it reconstructs recalled mental contents through the faculty of imagination. That is to say, we have learned the mental processes through which the mind passes in (1) thinking, (2) remembering, and (3) imagining.

This is all useful knowledge.

It can be converted into a vast reservoir of static intellectual or knowing power by any one who has gained a knowledge of Nature's facts, as stated in this lesson, provided the individual will do two things. The first of these two things is that he must learn how to actually develop these three faculties.

Until he actually develops the faculties, it does him but little good to know what the faculties are capable of doing when they are developed.

The practical value of all these teachings thus far centers upon the development in the individual, so

that he will have facility in the actual doing of twelve things right: (1) to sensate right, (2) to image right, (3) to conceive right, (4) to ideate right, (5) to reason right, through which (the power of reason) he comes to perceive correct judgments, laws and principles, (6) to receive right, (7) to record right, (8) to retain right, (9) to recall right, (10) to recognize right, (11) to restore right, and (12) to recombine constructively.

Having developed the faculties which, being developed, enable him to do these twelve things right, there will still remain one more condition which he must fulfill if he is to increase his power to render permanently satisfactory Service, and hence his power to secure progressively profitable patronage.

This one remaining condition is that he must convert his developed faculties into actual usefulness by the direct application of them to the problem of his everyday life.

This may seem like a very formidable program. But it is not, from the standpoint of the number of things to be done, and which everybody in the world must do if he is really going to develop the faculties which, developed, enable him to carry out the above program.

All great things are simple in final analysis, including this great thing of the development of the faculties to think, to remember, and to imagine.

As a matter of fact, in order to develop these

three faculties he has to do but two things, with which we are in a general way already acquainted.

1. He must nourish and use his mind right.
2. He must nourish and use his body right, including his brain areas.

The first great essential. In final analysis, all education or development, as we have already seen, resolves itself into these two processes: (1) correct nourishment, and (2) correct use.

In order to give these two processes a chance to operate, and thus cultivate the power to perceive, one must first of all have a sound physical body.

The psychological reason for this is that the screen of consciousness—the physical part of the human organism which consciousness uses to perceive with; the gray matter of the brain—is, as we have seen, the receiver of sensations which are in turn the very foundation of consciousness.

As we have already seen in Chapter V, this gray matter is literally “the screen of consciousness.”

Dr. Thomson tells us that it is the most important matter in the world, for the simple reason that it is the connecting link between the world of matter and the world of mind.

It is the jumping-off place of the physical vibration, as it does the work of manufacturing a sensation. It is the nesting and resting place of the afferent nerves—man’s great receiving instrument.

The afferent nerve system is the telegraph system

over which the vibrations bring the raw material out of which thought stuff is made, and its terminal facility—its central exchange—is built in the gray matter of the brain.

The telegraph without good exchange facilities is badly handicapped and can never be one hundred per cent efficient. So this human telegraph, transmitting the raw material of thought stuff, must be provided with healthy, red-blooded gray matter in which to manufacture clear, vibrant sensations in order to attract the "favorable attention" of the eye of the mind—perception.

The old, old maxim, *mens sana in corpore sano* (a sound mind in a sound body), takes on an added significance in the light of facts revealed by physiological psychology.

We see now that it is a psychological impossibility to have a one hundred per cent power of perceiving sensations, images, concepts, ideas, judgments, laws, and principles, and a one hundred per cent power to properly receive, record, retain, recall, recognize, restore, and recombine the mental contents after once manufactured, unless one first takes care of the first condition and provides his mind with a sound body through which to function.

If any part of the body is diseased, or becomes disorganized in any way, every other part is to some degree adversely affected, and the gray matter is a part of the body. So are the nerves, both afferent and efferent. And so, too, are the

central cells connecting the afferent and efferent nerves.

While there are examples in history of great minds operating in weak bodies, this does not argue against our case. Those same minds would have operated still better had they had perfectly sound bodies through which to operate.

A master musician will get much better music from an ordinary violin than will an amateur playing on the same instrument, but it does not follow from this that he would not do much better with a Stradivarius. We know he would.

Lesson Six will be devoted entirely to the means of developing a sound and healthful body. We shall not, therefore, enter here upon a discussion of the nine laws which, obeyed, result in health. But here it is our province simply to impress upon the student the fact that he cannot develop his intellectual faculties to the highest possible degree unless he takes care of his physical body.

We want him to realize that it is a fact in Nature, and not a mere theory of an individual, that this is the starting-point, the first essential which Nature demands for the building of a sound mind.

Business Science wants the student to realize that there is no escape from it, that there is no short cut, no royal road to the development of the faculties of thinking, remembering, and imagining; that every one who really develops them must do the same thing, and that the first thing each must do

is to develop a sound body, a part of which is the gray matter of his brain.

The gray matter which you have right now does very well as a receptacle for your afferent nerves, for the manufacture of sensations, provided the gray matter is healthy, is not being poisoned, and its plasticity and receptivity are not interfered with through the violation of natural laws of physical well-being.

So, then, when you come to Lesson Six of this course, and are studying intensely the laws of health, do not fail to realize that as you are studying them and applying the truths you are actually doing things which must be done in order to develop the faculties of thinking, remembering, and imagining.

The second great essential. Granted the fulfillment of the first condition—perfectly healthy gray matter—the next essential for an expanding consciousness is **mental hunger**.

By this term Business Science means a genuine desire for knowledge. As pointed out in Lesson Three, the soul simply must have food if it is going to grow, as certainly as must the body.

In order, therefore, to develop the faculties of thinking, remembering, and imagining, a mental appetite must be cultivated for sensations, images, concepts, ideas, judgments, laws, and principles.

The ego, or consciousness, must come to enjoy

mental meals as much as the vitally hungry workman enjoys a first-class physical meal.

If a human soul could be completely denied every possible afferent communication with the outside world it would soon become a dead mental world.

Modern social psychology has demonstrated that man's mind, his ego—in a word, his "self"—is a social thing, a social self built up and expanded through the process of association and contact with other "selves."

The more mental food—nourishment—it wants, the more it will get.

There are millions of people who as soon as they lose their physical appetite are very much concerned about it and immediately consult a physician. But a large percentage of these same people do not seem at all concerned by the absence of mental hunger.

Is it any wonder, then, that ninety-five per cent fail to develop or unfold their intellectual faculties to a sufficient degree to enable them to render permanently satisfactory Service?

The way to wanting mental food—the road to the desiring of it—is for the intellect to come to an appreciation of the values of mental food.

When this takes place in consciousness the mind becomes more and more deeply interested in the problem of acquiring mental food, and the concentrated interested attention of the mind's eye (perception) is centered upon really trying to perceive.

This can have but one possible result, according to natural law.

Intensification of favorable attention creates a deeper interest, deepened interest creates a deeper appreciation, deepened appreciation intensifies desire, deepened desire impels decision, decision impels action, and the soul once aroused to an appreciation of the value of mental food persists in its quest for truth and enjoys that quest.

Our next lesson—Lesson Five—is devoted exclusively to the science of the development of the constructive feelings. Lesson Ten is devoted to an elaboration of the mental law of “securing,” as briefly outlined in Lesson Two. As you study each of these lessons, and apply their truths, remember that while you are doing this you are training your intellectual faculties, for in Lesson Five you will learn exactly how to develop your desire for the right kind of mental food to the highest possible degree, and in Lesson Ten you will study the problem of “favorable attention” in its minutest details.

The third great essential. Sound and red-blooded gray matter plus mental hunger, while absolute essentials for the building of the capacities to think, remember, and imagine, are not alone sufficient. Mental hunger must not be permitted to result in mental gormandizing at the expense of use.

The mental nourishment brought to the gray matter over the afferent channels, and manufac-

tured into sensations, images, concepts, ideas, judgments, laws, and principles, must find vent over the efferent channels in the form of usefulness—Service.

All this requires a **strong volitional power**.

One must have the determination to acquire mental food, and he must decide and act accordingly, and keep on acting.

This is impelled by the intensity of the desire for it.

But it must not stop there. The efferent nerve must be exercised if faculties are to be developed, and hence facility in thinking, remembering, and imagining.

The bookworm storing knowledge and not using it will never develop to a high degree his power to think, remember, and imagine. It is just as much an impossibility for him to do so as it is for one to develop the muscle in the arm by nourishing it, without also using it.

The brain areas used by the perceptive faculty to mentally perceive relations between mental contents simply will not unfold or develop to anything like their highest possible power unless the receiver gives out that which he has received.

This requires purpose, self-discipline, self-control—the exercise of what Professor Thomson tells us is the second principle involved in the building of the nervous system, namely, **discipline**.

Program of study. Lesson Seven of this course of study is devoted wholly to the study of volition and the will, and the science of their development.

Thus do we see the interdependence of the four grand divisions of man's nature—intellect, sensibilities, body, and will.

When you study Lessons Five, Six, and Seven, you will in reality be studying the science of the development of things which are absolutely essential to the highest possible development of the intellect.

These, therefore, constitute general principles for the development of the faculties of thinking, remembering, and imagining.

In addition to this, the textbook accompanying this lesson is one especially prepared with the end in view of enabling the students of the Science of Business to train these three faculties through the application of specialized exercises. The textbook will be found to go most carefully into details concerning the mental processes involved in the exercise of the three basic intellectual faculties.

The study of Lesson Four has prepared you for an intensive study of the textbook, line upon line, precept upon precept.

First, study this lesson until you understand it. You will then find the study of the textbook a real delight, and not an arduous task, for your mind will be hungry for more mental food concerning these

three basic faculties of the mind which, developed, give the capacity to think, remember, and imagine, the sum of which makes for ability, the forerunner of discrimination, the regulator of the quality of what you do, an increaser of the quantity of your usefulness, an absolute essential for right Service, satisfactory Service, the Service which when rendered is the cause of progressively profitable patronage.

We are now ready to begin our studies in the science of "Reliability Development."

This we shall take up in the next lesson—Lesson Five.

Summary

First. In order to cultivate the power to perceive one must have a sound physical body.

Second. This is of the highest importance, because the gray matter of the brain is the receiver of sensations.

Third. If any part of the body is diseased, every part suffers to some degree, and the gray matter will be affected.

Fourth. The first requisite for a sound mind is a sound body.

Fifth. The second essential, after health of body, is mental hunger, a real desire for knowledge.

Sixth. The third essential, after red-blooded gray matter and mental hunger, is use. The mental contents must find expression in Service.

Seventh. All of this requires a strong volitional power.

Eighth. One must decide to act and keep on acting.

Ninth. Acting, the giving out of what has been received, requires purpose.

Tenth. Acting with purpose to the end of developing ability requires discipline.

TEST QUESTIONS

1. What are the four prerequisite necessities for thinking?
2. Give four physiological facts which have an important bearing on the process of thinking.
3. What is meant by a mental image? How are images formed? Name five kinds of images.
4. What three things must the perceptive faculty do in order to form a concept? What two classes of concepts are here made? Give an example of each.
5. What is the simplest form of thought? When expressed in words what is it called? Give three examples of ideas.
6. What is a judgment? How are judgments formed? Name four kinds of unsound judgments and explain to what each is due.
7. How does the mind discover a law?
8. What is a principle? How is it perceived? What are the seven steps in the process of thinking?
9. What is the value of a good memory to the business building salesman? What is the Law of Association? What are the five aids to memory? Give an example of each.
10. Define imagination. What is the value of this mental power? What has it done for the world? What materials does the imagination use? What is its influence on health? Why must it be controlled?
11. What two things must one do in order to develop thought, memory and imagination?
12. What is the practical value of this lesson?

